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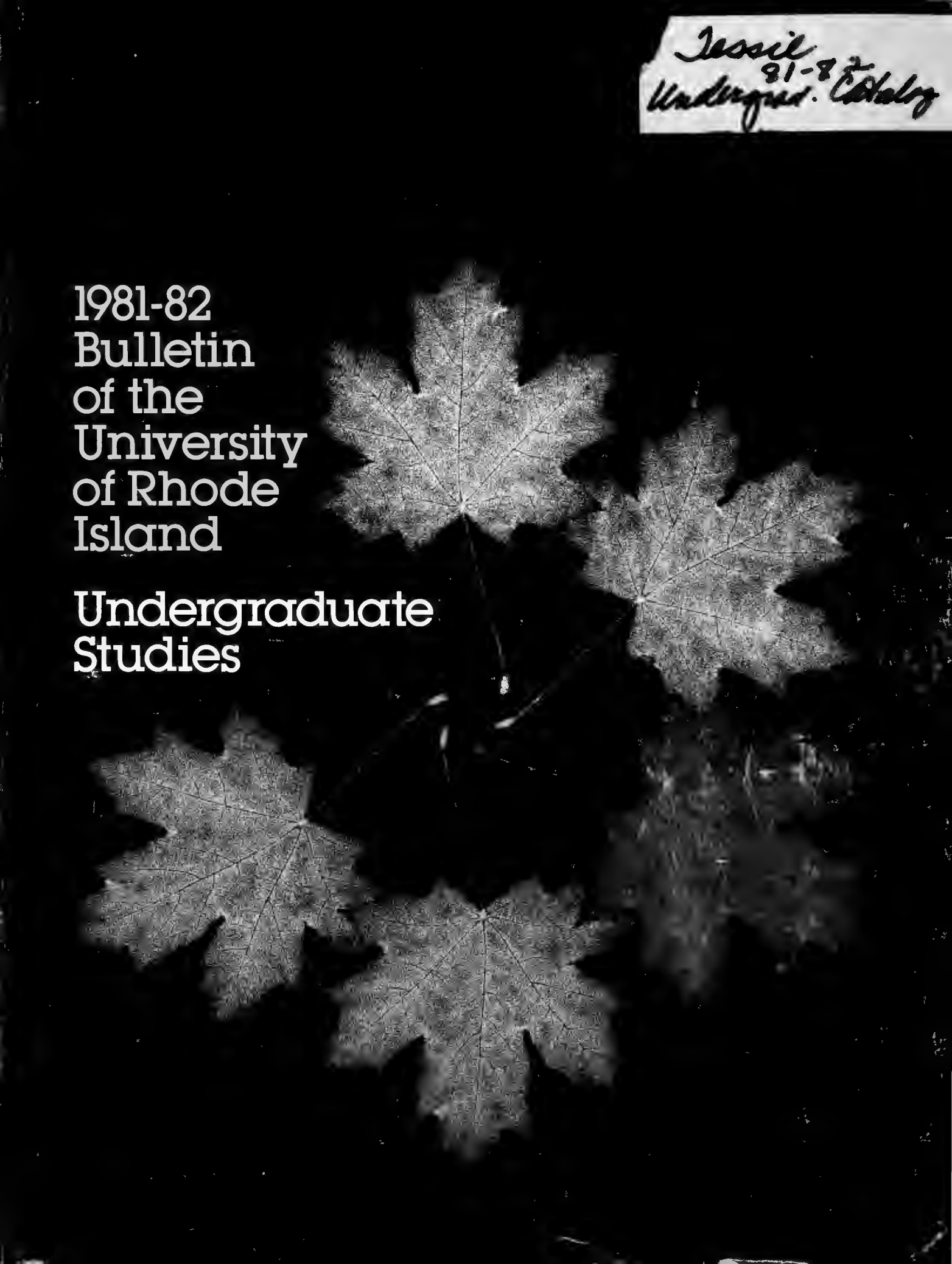
Undergrad. Catalog

# 1981-82 Bulletin of the University of Rhode Island

# Undergraduate Studies



# 1981-82 Bulletin of the University of Rhode Island

# Undergraduate Studies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# 1981-82 Calendar

## First Semester

**September 7, Monday**
Holiday, Labor Day

**September 8, Tuesday**
Registration, 8:00 am-5:00 pm

**September 9, Wednesday**
Classes begin, 8:00 am

**September 11, Friday**
University Faculty Meeting, 3:30 pm

**September 15, Tuesday**
University Convocation, 3:30 pm

**September 18, Friday**
Final day for students to drop courses

**September 22, Tuesday**
Final day for students to add courses, and to add S/U grading option

**October 12, Monday**
Holiday, Columbus Day

**October 23, Friday**
Mid-semester. Final day for students to change from S/U option to grade

**October 26-30**
Advance registration for spring semester

**November 11, Wednesday**
Holiday, Veterans Day

**November 18, Wednesday**
University Faculty Meeting, 3:30 pm

**November 26, Thursday**
Thanksgiving recess begins, 8:00 am

**November 30, Monday**
Classes resume, 8:00 am

**December 14, Monday**
Classes end

**December 15-16**
Reading days

**December 17-23**
Final examinations

**December 29, Tuesday**
Final grades due in Registrar's Office, 4:00 pm

## Second Semester

**January 18, Monday**
Registration, 8:00 am-5:00 pm

**January 19, Tuesday**
Classes begin, 8:00 am

**January 27, Wednesday**
University Faculty Meeting, 3:30 pm. Final day for undergraduates to drop courses

**February 1, Monday**
Final day for students to add courses, and to add S/U grading option

**February 15, Monday**
Washington's Birthday. No classes

**February 17, Wednesday**
Monday classes meet

**March 10, Wednesday**
Mid-semester. Final day for students to change from S/U option to grade

**March 15, Monday**
Spring recess begins, 8:00 am

**March 22, Monday**
Classes resume, 8:00 am

**March 29-April 2**
Advance registration for fall semester

**May 4, Tuesday**
University Faculty Meeting, 3:30 pm

**May 5, Wednesday**
Classes end

**May 6-7**
Reading days

**May 10-15**
Final examinations

**May 18, Tuesday**
Final grades due in Registrar's Office, 4:00 pm

**May 30, Sunday**
Commencement

## Summer Session 1982

**June 21 — July 22**
First five-week session

**July 26 — August 26**
Second five-week session

Changes in the academic calendar due to major storms, labor unrest, or other circumstances, may be made when it is in the best interest of the institution, and without prior notice to the students.

# The University

The University of Rhode Island is a medium-sized state university in the southern part of Rhode Island in the village of Kingston. In part because of its unique location near the ocean and six miles from Narragansett Bay, the University has developed strong marine programs and has been designated one of the national sea grant colleges. As a land-grant college since its founding in 1892, it emphasizes preparation for earning a living and for responsible citizenship, carries on research, and takes its expertise to the community in extension programs.

The University enrolls about 11,000 students on its Kingston campus and another 4,000 in credit courses throughout the state. About half of the 13,000 undergraduates are resident students; there are about 2,500 graduate students, and a full-time teaching faculty of over 800.

**The Campus.** The University has a spacious country campus 30 miles south of Providence in the northeastern metropolitan corridor between New York and Boston. The center of campus is a quadrangle of handsome old granite buildings surrounded by other newer academic buildings, student residence halls, and fraternity and sorority houses. On the plain below Kingston Hill are gymnasiums, athletic fields, tennis courts, a freshwater pond, agricultural fields, and greenhouses.

In addition to the Kingston campus, the University has three other campuses. The 165-acre Narragansett Bay Campus, six miles to the east overlooking the west passage of the Narragansett Bay, is the site of the Graduate School of Oceanography. The Rhode Island Atomic Reactor and several federal laboratories devoted to marine sciences are also located there. The College of Continuing Education has a building in downtown Providence. In the western section of the state, 20 miles from Kingston, is the W. Alton Jones Campus. Its 2,300 acres of woods, fields, streams, and ponds is the site of environmental education, research, and conference facilities.

**History.** The University had its beginning in the state agricultural school chartered in 1888. The Oliver Watson farm was purchased as a site for the school, and the old farmhouse, now restored, still stands on the campus. The school became the Rhode Island College of Agriculture and Mechanic Arts in 1892, and the first class of 17 members was graduated two years later.

The Morrill Act of 1862 provided for the sale of public lands, the income from which was to be used to create at least one college in each state with the principal purpose of teaching agriculture and mechanic arts. From this grant of land comes the name land-grant applied to the national system of state colleges and, in a later adaptation of the concept, federal funds given to colleges for marine research and extension are called sea grants.

In 1909 the name of the college was changed to Rhode Island State College, and the program of study was revised and expanded. In 1951 the college became the University of Rhode Island by act of the General Assembly. The Board of Regents for Education appointed by the governor became the governing body for the University in 1970. An historical outline may be found in the appendix.

## Programs of Study

**Undergraduate Study.** All programs aim at a balance of studies of the natural and social sciences, the humanities, and professional subjects. The courses and programs of study have been approved by national accrediting agencies and are accepted for credit by other approved institutions of higher education (see Programs and Requirements).

Undergraduate students may earn the following degrees:

Bachelor of Arts
Bachelor of Science
Bachelor of Fine Arts
Bachelor of Music
Associate in Science in dental hygiene or in fisheries and marine technology (two-year programs)
Bachelor of General Studies (College of Continuing Education only)

## Undergraduate Degrees

**College of Arts and Sciences**
Anthropology: B.A.
Art: B.A., B.F.A.
Biology: B.A.
Botany: B.S.
Chemistry: B.A., B.S.
Classical Studies: B.A.
Comparative Literature Studies: B.A.
Computer Science: B.S.
Dental Hygiene: (four years) B.S., (two years) A.S.
Economics: B.A.
English: B.A.
French: B.A.
Geography and Marine Affairs: B.A.
Geology: B.A.
German: B.A.
History: B.A.
Italian: B.A.
Journalism: B.A.
Latin American Studies: B.A.
Linguistics: B.A.
Mathematics: B.A., B.S.
Medical Technology: B.S.
Microbiology: B.S.
Music: B.A., B.Mus.
Philosophy: B.A.
Physics: B.A.
Political Science: B.A.
Psychology: B.A.
Russian: B.A.
Sociology: B.A.
Spanish: B.A.
Speech Communication: B.A.
Theatre: B.A., B.F.A.
Urban Affairs: B.A.
Women's Studies: B.A.
Zoology: B.S.

**College of Business Administration**
Accounting: B.S.
Business Education: B.S.
Finance: B.S.
General Business Administration: B.S.
Insurance: B.S.
Management: B.S.
Management Information Systems: B.S.
Management Science: B.S.
Marketing: B.S.
Production and Operations Management: B.S.
Urban Affairs: B.S.

**College of Engineering**
Biomedical Electronics Engineering: B.S.
Chemical Engineering: B.S.
Chemical and Ocean Engineering: B.S.
Civil and Environmental Engineering: B.S.
Civil and Ocean Engineering: B.S.
Computer Electronics Engineering: B.S.
Electrical Engineering: B.S.
Industrial Engineering: B.S.
Mechanical Engineering: B.S.
Mechanical and Ocean Engineering: B.S.
Urban Affairs: B.S.

**College of Human Science and Services**
Consumer Affairs: B.S.
Education: (elementary and secondary) B.A.
General Home Economics: B.S.
Home Economics Education: B.S.
Human Development and Family Studies: B.S.
Physical Education, Health, and Recreation: B.S.
Textiles, Clothing, and Related Art: B.S.
Textile Marketing: B.S.
Urban Affairs: B.S.

**College of Nursing**
Nursing: B.S.

**College of Pharmacy**
Pharmacy: (five years) B.S.
Respiratory Therapy: B.S.

**College of Resource Development**
Animal Science and Technology: B.S.
Aquaculture and Fishery Technology: B.S.
Fisheries and Marine Technology: (two years) A.S.
Food Science and Nutrition: B.S.
Natural Resources: B.S.
Plant Science and Technology: B.S.
Urban Affairs: B.S.

## Graduate Degrees

Accounting, M.S.
Animal Pathology, M.S.
Animal Science, M.S.
Applied Mathematical Sciences, Ph.D.
- Applied Mathematics
- Computer Science
- Operations Research
- Statistics
- Applied Probability

Biochemistry-Biophysics, M.S.
Biological Sciences, Ph.D.
- Animal Pathology
- Biochemistry-Biophysics
- Botany
- Food Science and Nutrition
- Microbiology
- Plant Pathology
- Resource Chemistry
- Zoology

Botany, M.S.
Business Administration, M.B.A.
Business Education, M.S.
Chemical Engineering, M.S., Ph.D.
Chemistry, M.S., Ph.D.
Child Development and Family Relations, M.S.
- Marriage and Family

Civil and Environmental Engineering, M.S., Ph.D.
Community Planning, M.C.P.
Comparative Literature, M.A.
Computer Science, M.S.
Economics, M.A.
Economics — Marine Resources, Ph.D.
Education, M.A.
- Education Research
- Elementary Education
- Guidance and Counseling
- Reading Education
- Science Education
- Secondary Education
- Youth and Adult Education

Electrical Engineering, M.S., Ph.D.
- Biomedical Engineering

English, M.A., Ph.D.
Environmental Health Science, M.S.
Experimental Statistics, M.S.
Food Science and Nutrition, M.S.
French, M.A.
Geography, M.A.
Geology, M.S.
History, M.A.
Home Economics Education, M.S.
Industrial Engineering, M.S.
Library Science, M.L.S.
Marine Affairs, M.A., M.M.A.
Mathematics, M.S., Ph.D.
Mechanical Engineering and Applied Mechanics, M.S., Ph.D.
Medicinal Chemistry, M.S.
Microbiology, M.S.
Music, M.M.
Nursing, M.S.
Ocean Engineering, M.S., Ph.D.
Oceanography, M.S., Ph.D.
Pharmaceutical Sciences, Ph.D.
- Medicinal Chemistry
- Pharmacognosy
- Pharmacology and Toxicology
- Pharmacy

Pharmacognosy, M.S.
Pharmacology and Toxicology, M.S.
Pharmacy, M.S.
Pharmacy Administration, M.S.
Philosophy, M.A.
Physical Education, M.S.
Physics, M.S., Ph.D.
Plant and Soil Science, M.S.
Plant Pathology-Entomology, M.S.
Political Science, M.A.
- International Relations

Psychology (School), M.S., Ph.D.
Psychology, Ph.D.
- Clinical
- General Experimental

Public Administration, M.P.A.
Resource Chemistry, M.S.
Resource Economics, M.S.
Sociology, M.A.
Spanish, M.A.
Speech Pathology and Audiology, M.A., M.S.
Textiles, Clothing and Related Art, M.S.
Zoology, M.S.

All freshmen who enter the University to earn a bachelor's degree are first enrolled in University College (see page 29). Undergraduates have a wide choice of programs from which to choose a concentration and the advising program in University College provides help in making this decision and in choosing appropriate courses.

The programs listed on the previous page are presented in detail in chapters describing the individual colleges. Interdepartmental curriculums and areas of interest are detailed in the chapter on University Programs and Requirements.

**Graduate Study.** Study at the graduate level leads to the master's degree in over 60 areas of study and the degree of Doctor of Philosophy in 24. Students may earn the following degrees:

Master of Arts
Master of Science
Master of Business Administration
Master of Community Planning
Master of Library Science
Master of Marine Affairs
Master of Music
Master of Public Administration
Doctor of Philosophy

**Graduate School.** Students holding the baccalaureate degree from this University or from another having equivalent requirements may be admitted for graduate study, providing that their credentials meet the standards set by the Graduate School and by the department in which they wish to study, and that facilities for study are available in their field of interest. Among the standards required for full status admission are an undergraduate average approximating B or better and satisfactory scores on a nationally administered examination. Applicants with somewhat lower undergraduate averages but high examination scores may be admitted on conditional status. Individual departments may, however, apply admission standards which are higher than the general standards just described.

Within each college's chapter in this bulletin, the related graduate degrees are listed. A *Graduate Bulletin*, containing complete information on graduate study and application forms, is available from the Dean of the Graduate School, University of Rhode Island, Kingston, RI 02881. Further information may be requested from the chairperson of the appropriate department. Applications are returned to the Dean of the Graduate School.

Each applicant must submit (1) completed application forms in duplicate, with a $15 nonrefundable application fee (check or money order payable to the University of Rhode Island); (2) three letters of recommendation from individuals familiar with the applicant's work, preferably in the field for which he or she is applying; (3) two copies of an official transcript sent directly from each college or university attended; and (4) scores from the Graduate Record Examination aptitude tests. See the *Graduate School Bulletin* for those programs which require the GRE advanced tests or which require a different national test.

Applicants from foreign countries must complete the Test of English as a Foreign Language (TOEFL) with minimum scores of 500 for science students and 550 for non-science students. All inquiries from international students concerning applications, fees, housing, etc., should be directed to the Director for International Student Affairs.

The usual deadlines for receipt of applications are April 15 for September and Summer Session admission, and November 15 for February admission. See the *Graduate School Bulletin* for those programs which have earlier application deadlines.

*The Graduate Library School* on the main campus offers study leading to the Master of Library Science degree. Students in undergraduate and other graduate programs may, with the approval of their adviser, enroll in library science courses that relate to their studies.

*The Graduate School of Oceanography* on the Narragansett Bay Campus, six miles from Kingston, offers study leading to the Master of Science and Doctor of Philosophy degrees in the areas of biological, chemical, geological and physical oceanography. Instruction is limited to graduate study with the exception of a survey course in general oceanography and an intensive program designed to provide undergraduates with a total involvement for one semester in a marine laboratory setting. Both of these offerings are at the 400 level.

The 165-acre Narragansett Bay Campus borders the shore and includes a basin and dock within easy reach of both the Bay and the open ocean. The University operates several vessels, the largest of which is a 177-foot ocean-going research ship, *Endeavor*.

A number of buildings make up the Bay Campus and include a quadrangle of laboratories, offices, and the Pell Marine Science Laboratory; a 12,000-square-foot research aquarium; a towing test tank; and a specially designed facility which permits moderate-scale controlled ecosystems experiments.

**College of Continuing Education.** This College offers classes and degree programs in continuing education and degree programs designed for adults whose family or work responsibilities have caused interruption in their formal post-high-school education. Academic programs lead to Bachelor of Science degrees in business administration; industrial engineering; nutrition and dietetics; food science technology; general home economics; home economics education; human development, counseling, and family studies; and textiles and clothing. Bachelor of Arts degrees may be obtained in economics, English, history, psychology, secondary education, and speech communication. The Bachelor of General Studies degree offers concentrations in business institutions and human studies. Graduate level programs include Master of Business Administration, Master of Library Science, Master of Marine Affairs, Master of Public Administration, Master of Science in Computer Science, Master of Science in Electrical Engineering, and a Master of Science in Mechanical Engineering and Applied Mechanics.

Courses are offered in the morning, afternoon, and evening, and students enrolling in a degree program may attend at a time most convenient for them. A nursery school provides nursery education for young children mornings during the week.

Certification programs for various professions as well as individual credit and non-credit (CEU) courses are also offered. In addition, institutes, seminars, conferences, and special courses are planned for business, in-

dustry, labor, government, and the professions.

Psychological Testing Services provides psychological testing and group and individual guidance. This office administers the CLEP examinations.

The College operates community centers throughout the state. Both credit and non-credit evening courses are offered in Kingston, Middletown, and Westerly.

**Summer Session.** The College of Continuing Education has administrative responsibility for developing and coordinating the University's summer offerings. Courses are offered in two terms at both Kingston and Providence: a four-week pre-session and a six-week main term. In addition, a number of special programs of varying duration are offered at varying dates in the alternate term. Students may attend either or both campuses, and enroll in day or evening courses offered in any summer term.

Students expecting to apply summer credits to their degree programs are advised to obtain prior approval of their academic dean before registering. Maximum course load is 6 credits in the four-week pre-session and 7 credits in the six-week main session, including courses taken simultaneously in the alternate term. Exceptions are allowed with permission of the student's academic dean.

## Academic Services

**The University Libraries.** The University's library collection of over 650,000 bound volumes and 650,000 volume-equivalent microforms is housed in the University Library in Kingston, at the College of Continuing Education in Providence, and in the Claiborne Pell Marine Science Library on the Narragansett Bay Campus. The latter was designated the National Sea Grant Depository in 1971.

The University Library, which holds the bulk of the collection, has open stacks which provide direct access to books, periodicals, documents, maps, microforms, and audiovisual materials. The Special Collections Department collects and maintains rare books, manuscripts, the University archives, and a variety of special interest materials. Service hours at the other libraries vary, but the University Library provides full reference, bibliographic, and circulation services during most of the 90 hours a week it is open. Terminals linked to the Academic Computer Center are available in the Library during the hours both facilities are operating. A computer-based bibliographic system makes most books available to users one week after their receipt.

**The Academic Computer Center.** The Academic Computer Center has an Itel AS/5 computer with 4096K of high-speed storage, disk storage units, magnetic tape, card, and printer input/output devices, and an on-line plotter. The system's hardware and software accommodate both remote batch and interactive terminal usage with graphics support as well as normal batch processing. A Prime 400 minicomputer which supports timesharing and intermediate-speed remote batch input is installed at the Narragansett Bay Campus. The Department of Electrical Engineering has a Data General Eclipse and two PDP-9 computers with a graphics display console linked to the Academic Computer Center's system. Various types of typewriter and display terminals for interactive use or remote job entry are located on the campus in most of the science and engineering departments as well as the College of Business Administration, the College of Pharmacy, the University Library, and the Graduate School of Oceanography. Off-campus installations include the College of Continuing Education and various high schools in the state.

The staff develops and maintains programming systems and application programs, conducts short courses and workshops, and provides programming assistance. Faculty in the Department of Computer Science and Experimental Statistics consult on numerical methods, statistical analysis, and computational techniques.

## Research and Extension

Within the state system of higher education, the University has the major responsibility for graduate education which is interdependent with a strong program of research. There are active research programs in almost all departments of the University, and in 1979-80 funds for research totalled

$20,661,377. Support comes from foundations, commercial firms, federal and state governments, and the University. Applications for research grants are signed by the University's Coordinator of Research who is the liaison officer for the president, the business manager, the academic deans, the Research Committee and the faculty in matters pertaining to general research policy.

The results of research and the expertise of the faculty and staff are made available to the general public in extension programs and publications.

In addition to research conducted in the various departments, the University has established the following research and extension programs in specially defined areas; these are described in detail in the appendix.

**Agricultural Experiment Station** (College of Resource Development)

**Bureau of Government Research**

**Center for Energy Studies**

**Center for Ocean Management Studies**

**Cooperative Extension Service** (College of Resource Development)

**Curriculum Research and Development Center** (College of Human Science and Services)

**Division of Marine Resources,** including Marine Advisory Service, Coastal Resources Center, National Sea Grant Depository, and Regional Coastal Information Center

**International Center for Marine Resource Development,** including Consortium for the Development of Technology (College of Resourced Development)

**Laboratories for Scientific Criminal Investigation** (College of Pharmacy)

**Research Center in Business and Economics** (College of Business Administration)

**Rhode Island Water Resources Center** (College of Engineering)

**URI Clearinghouse for Volunteers** (College of Human Science and Services)

The University distributes the results of its research in publications available to the public. These include a series of marine bulletins, technical reports, and Cooperative Extension and Agricultural Experiment Station bulletins.

The University also publishes through the *University Press of New England,* of which it is a member. Manuscripts originating on the seven member campuses and elsewhere are published as determined by the director and the editorial board on which the University is represented.

## The University Community

In addition to the student body, the University community is made up of faculty, administration, staff, and alumni. The *Faculty Senate* represents the faculty and was authorized in 1960 by the general faculty to conduct the business assigned to the faculty by law or by the Board of Regents for Education. *The Graduate Council* is the representative body for the graduate faculty and determines the academic policies for graduate study. The office of *University Ombudsman* investigates complaints from students, faculty, and administrative personnel that they have been unfairly dealt with in the normal channels of administrative process. The ombudsman is a tenured member of the faculty, elected by the general faculty, and is assisted by a student nominated by the Student Senate and appointed by the president.

*The Instructional Development Program* exists to assist the faculty in its teaching responsibilities. Workshops, colloquiums, and seminars, as well as personal consultations, assist faculty interested in increasing their teaching effectiveness.

The voice of the alumni is heard through the *Alumni Association* which includes all those who have attended the University for two semesters or more and whose class has graduated. The organization, with about 45,000 members, promotes the interests of the University and maintains the ties of alumni with their alma mater through programs, services, and the publication of a bulletin. An annual fund drive provides scholarship aid.

The University receives less than half of its support from the state. The balance comes from student fees and tuition, federal grants, and auxiliary enterprises and other miscellaneous sources. *The University of Rhode Island Foundation* encourages and administers gifts from private sources to build a substantial endowment for continuing support of the University. It is concerned with the support of University activities for which adequate provision is not ordinarily made by appropriations from public funds.

**Handicapped and Minorities.** The University makes every effort to comply with all federal regulations relating to discrimination and accessibility for the handicapped. A large percentage of the buildings on campus are available to the handicapped, (see map on p. 189) and special provision is made to assure that no student is prohibited from pursuing a course of study because of restricted access to buildings.

The University of Rhode Island prohibits discrimination on the basis of race, sex, religion, age, color, creed, national origin, or handicap and discrimination against disabled and Vietnam era veterans in the recruitment, admission or treatment of students, the recruitment, hiring or treatment of faculty and staff, and the operation of its activities and programs. This is in compliance with state and federal laws, including Titles VI and VII of the Civil Rights Act of 1964 as amended, Title IX of the 1972 Education Amendments to the Higher Education Act, Executive Order 11246, as amended, Sections 503/504 of the Rehabilitation Act of 1973, and Section 402 of the Vietnam Era Readjustment Assistance Act of 1974. Inquiries concerning compliance with antidiscrimination laws should be addressed to the Affirmative Action Officer, University of Rhode Island. Questions regarding provisions for the handicapped should be directed to the Committee to Meet the Needs of the Handicapped.

# Programs and Requirements

Consistent with its policy of allowing the greatest latitude possible in course selection, the University offers a wide choice to fill its general education requirements and encourages students to select free electives that cross departmental and college lines. This section deals with academic requirements, regulations and opportunities that are University-wide rather than college-related.

The University attempts to provide the successful student with a range of knowledge and skills which can, with appropriate motivation and initiative, be used in a variety of ways after graduation. Study options vary from the traditional liberal education to programs which are heavily vocationally oriented. Successful completion of any course of study at the University, however, does not guarantee that the student will find either a specific kind or level of employment.

Students interested in the career opportunities related to particular programs of study are encouraged to consult University College advisers, the appropriate department chairperson, and/or the staff of the Office of Career Services. For students who are uncertain about their career choices, the Counseling Center offers help.

The University administration, which has the responsibility of maintaining academic standards for such purposes as accreditation, determines the courses and program requirements. These may be changed without prior notice to the student, but an effort will be made in such cases to adjust requirements to take into account the best interests of the student. Changes in the academic calendar due to major storms, labor unrest, or other circumstances, may be made when it is in the best interest of the institution, and without prior notice to the students.

**Accreditation.** The courses and programs of study offered by the University of Rhode Island have been approved by national accrediting agencies and are accepted for credit toward college degrees by other approved institutions of higher learning. The national accrediting agencies which have approved the quality of the course offerings of the University of Rhode Island include the American Association of Universities, the American Assembly of Collegiate Schools of Business, the American Chemical Society, the American Council on Phamaceutical Education, the American Dental Association (Council on Dental Education), the American Library Association, the American Psychological Association, the American Society of Journalism School Administrators, the Accreditation Board for Engineering and Technology, the National Association of Schools of Music, the National League for Nursing, the New England Association of Colleges and Secondary Schools, and the State University of New York.

The University is also an approved member institution of the American Association of University Women, the Council of Graduate Schools in the United States, the North American Association of Summer Sessions, and the National University Extension Association.

## General Education Requirements

**These requirements apply to freshmen entering in the fall of 1981 and transfer students entering in the fall of 1981 with fewer than 15 transferrable credits. All other students must follow the General Education requirements outlined in the Undergraduate Bulletin for 1980-81 or the year in which they matriculated at the University.**

The University of Rhode Island believes that all undergraduate students, regardless of their degree program, need experience in the study of fundamentals which builds upon the student's previous education and continues to be advanced through the undergraduate years and beyond. Thus, all bachelor's degree students follow the same university-wide General Education requirements.

General Education is that part of the undergraduate curriculum in which students explore a broad spectrum of intellectual subjects, approaches, and

perspectives. The General Education component of the curriculum aims to help accomplish these three goals: (1) develop further the essential English communication abilities upon which advanced studies depend; (2) offer experience in five broad subject areas: fine arts and literature, letters, mathematics, natural sciences, and social sciences; and (3) expose the student to a foreign language or culture.

The General Education program is divided into the following components which correspond to these goals:

**English Communication.** *6 credits* in English communication, at least 3 of which must be in a course designed specifically to improve written communication skills;

**Fine Arts and Literature.** *6 credits* in courses related to historical and critical study of the arts and literature as well as creative activity;

**Foreign Language or Culture.** *6 credits* or the equivalent in a foreign language or foreign culture;

**Letters.** *6 credits* in courses which address fundamental questions about the human condition, human values, and ways of communicating these values;

**Mathematics.** *3 credits* in a course specifically designed to provide training in college-level quantitative skills and their application;

**Natural Sciences.** *6 credits* in courses in physical, chemical or biological sciences;

**Social Sciences.** *6 credits* in courses related to the study of the individual (development and behavior) and society.

*Specific courses which may be used to meet these requirements are listed in the following groups:*

**English Communication:** *Writing* (Cw) — BED 227; BGS 100; CMS 101; ENG 103; WRT 101, 102, 112, 122, 123, 300, and 333. *General* (C) — CMS 101; PHL 101; SPE 101 and 201.

**Fine Arts and Literature (A):** ART 101, 103, 120, 203, 207, 215, 231, 233, 251, 252, 280, 284, 359, 374; CLS 250; ENG 241, 242, 243, 251, 252, 261, 262, 263, 264, 265; FRN 325, 326, 391, 392, 393; GER 325, 326, 391, 392; ITL 325, 326, 391, 392, 393, 395; MUS 101, 111; PLS 233; RUS 325, 326, 391, 392; SPA 303, 306, 391, 392, 393; SPE 231.

**Foreign Language or Culture (F):** This requirement shall be fulfilled in one of the following ways: (1) foreign language coursework in a language not previously studied through the elementary level (completion of 102), coursework in a language previously studied through the intermediate level (completion of 104 in a living language or 302 in a classic language) or demonstrating equivalent competence through an examination; (2) majoring in a foreign language; (3) study abroad in an approved academic program for one semester; (4) six credits from one foreign culture cluster taken, if possible, in the same or successive semesters from the following list: *Africa,* APG 313, HIS 388, PSC 408; *American Indian,* APG 303, 311, HIS 344; *Ancient Greece and Rome,* ART 354, CLA 394, 396, ENG 366, GRK 109, 110, HIS 111, PHL 321; *East Asia,* HIS 171, 374, 375, PHL 131, 331; *France,* FRN 392, 393, HIS 330; *Germany,* GER 391, 392, 393, HIS 326, 327; *Islamic Civilization,* HIS 174, 175; *Latin America,* APG 315, HIS 180, 381, 382, 383, 384, SPA 393; *Medieval Europe,* ART 356, HIS 112, 304, ITL 395, PHL 322; *Modern Europe (Early),* ART 359, HIS 113, 306, 307, 314, PHL 323; *Modern Europe,* ART 361, 362, ENG 469, HIS 114, 310, 311, 315; *Russia and the Soviet Union,* HIS 132, 332, 333, RUS 391, 392, PSC 407. *Formally registered international students shall be exempt from the foreign language or foreign culture requirement.*

**Letters (L):** BGS 392; HIS 103, 105, 111, 112, 113, 114, 118, 122, 132, 141, 142, 143, 145, 150, 180, 315, 321, 322, 323, 324, 325, 327, 333, 341, 342, 353, 354, 381, 382, 383, 384; NUR 360; PHL 103, 104, 111, 117, 125, 126, 131, 227, 312, 318, 319, 321, 322, 323, 324, 328, 331, 346; PSC 341, 342; SPE 205, 210.

**Mathematics (M):** CSC 201; EST 220; MGS 101, 102; MTH 107, 108, 109, 141, 142.

**Natural Sciences (N):** APG 201; AST 108; AVS 101; BGS 391; BIO 101, 102A; BOT 111; CHM 101, 102, 103, 105, 107, 112, 114, 124, 191, 192; ESC 100, 105; FSN 207; GEL 100, 103, 104, 105; OCG 401; PHY 111, 112, 120, 130, 140, 213, 214; SLS 212; ZOO 111.

**Social Sciences (S):** APG 200, 202, 203, 319; BED 110; BGS 390; BST 101, 102; CNS 220; CSC 220; ECN 123, 125, 126, 300, 361; EDC 102, 312; FSN 150; GMA 100, 131; HCF 220; HLT 123; HSS 350; NUR 150; PSC 113, 116, 201, 221, 288; PSY 103, 113, 232, 235, 254; RDV 100; REN 105; SOC 202, 208, 304, 316, 330, 336, 338, 340, 342; TXC 224.

Transfer students may receive General Education credit for courses taken at other institutions as long as such credits are in courses equivalent to courses given General Education credit at the University of Rhode Island.

In the Colleges of Arts and Sciences and Human Science and Services and for the Bachelor of General Studies, credits within a student's own field of concentration may not be counted towards General Education requirements in Fine Arts and Literature, Letters, Natural Sciences or Social Sciences. In other colleges, credits within a student's professional college may not be counted towards any General Education requirements. However, courses which serve as prerequisites for a concentration may be used to fulfill the General Education requirement.

Students must meet the curricular requirements of the colleges in which they plan to earn their degrees. Some colleges require that students select specific courses from the above lists. Therefore, students must refer to the requirements specified for their programs (pages 30-77).

## Other Academic Requirements

Certain basic courses are required in many curriculums for transfer from University College into the degree-granting colleges at the junior-year level. These are listed in the individual colleges' curriculums.

The responsibility for meeting all course and credit requirements for the

degree must rest with each individual student.

Students who desire to accelerate their programs and receive credit for courses taken at other institutions or during Summer Session or in the College of Continuing Education must have prior approval from their academic deans.

## Interdepartmental Study

Students are encouraged to develop interests across departmental lines, and interdepartmental curriculums and areas of interest have been developed.

**Black Studies.** Students who declare Black Studies as an area of interest (see page 31) may use the following courses to fulfill the requirements. BST 101, 102 (6 credits) are required. Elective courses (12 credits) may be selected from APG 313; ENG 345, 346, 444; HIS 150, 175, 345, 379, 384, 388, 580; PSC 495, 510; REN 595; SOC 340, 434. Permission may be obtained on an ad hoc basis to use other courses that have as their central focus one or another aspect of the black experience.

**Comparative Literature Studies.** This program is offered jointly by the Department of English and the Department of Languages represented by the following national literatures: French, German, Greek, Italian, Latin, Portuguese, Russian, and Spanish. One of the concentration options and some individual courses are interdisciplinary. For a description of the curriculum and a listing of the courses see pages 36 and 90.

**Consumer Affairs.** This interdisciplinary program is designed for students who wish to develop effective strategies for dealing with complex social and economic systems relating to consumer concerns. Although affiliated with the Division of Interdisciplinary Studies in the College of Human Science and Services, coursework is drawn from a variety of colleges and departments to provide a broad perspective on issues relating to consumers. An internship or field experience is an integral part of the program. Interested students should consult with the program head or a member of the Consumer Affairs Coordinating Committee for program planning and course approval. (See page 64).

Students who declare an area of interest in consumer affairs are required to complete 18 credits in selected course work. Suggested courses might include: CNS 220, 320, 350, 420, and 422, as well as courses in political science, marketing, and business law.

**Gerontology.** This is a University-wide program. Its purpose is to develop within University teaching a clear recognition of the aging process and its implications, to promote the scientific and humanistic study of gerontological problems, and to relate the development of gerontology at the University to the larger community. The program, which is administered by a director and an advisory committee, maintains a consulting relationship with both the Rhode Island Institute of Mental Health and the Medical Center General Hospital. These and other alliances afford opportunities for research and practicum experience to students interested in problems of aging.

Students who declare gerontology as an area of interest must complete 18 hours of relevant course work. HCF 220 is required. Other gerontology courses include FSN 307, HCF 221, 380, 420, 421, 431; RCR 416 and SOC 438.

Interested students should contact the director of the program and are advised to do so as early as possible, preferably not later than the beginning of the senior year.

**New England Studies.** Students who declare New England Studies as an area of interest must take either NES 300 or 310 and elect at least one course from each of the following four categories: (1) Cultural Patterns — PSC 221, APG 317, ENG 430; (2) Aesthetic Dimensions — ART 263, ENG 347, 440; (3) Historical Dimensions — HIS 335, 346, 362; (4) Physical Dimensions — BOT 323, 418, 424; FMT 118, FOR 301, 302, GEL 101, 455-57. Permission may be obtained from the Committee for New England Studies to use any rotating topics course, seminar, etc., whose focus is on some aspect of New England as a substitute for any of the above courses.

**Special Populations.** This new, interdepartmental area of interest provides students the opportunity to explore the theory and gain practical experience through working with people who have special needs. This includes people who are handicapped (physically, emotionally, mentally, or educationally) or are different (socioeconomically, behaviorally, culturally) and as a result have special needs.

A minimum of 18 credits may be earned by taking the required courses (NUR) 101, HCF 200 or PSY 232, PSY 442), a minimum of 3 credits in supervised field experience, and a minimum of 7 credits of selected electives. Courses are chosen in consultation with an adviser from one of the participating departments: Education; Food Science and Technology; Human Development, Counseling and Family Studies; Nursing; Physical Education, Health and Recreation; Psychology; Sociology; Speech; Textiles, Clothing and Related Art; Theatre. The College of Human Science and Services administers the program and interested students should contact the program head, Jeannette E. Crooker (130 Tootell Center) for more information and a complete listing of possible electives.

**Textile Marketing.** This undergraduate interdepartmental curriculum may be pursued through the College of Human Science and Services (Department of Textiles, Clothing and Related Art) or through the College of Business Administration (Department of Marketing). The programs are: Textile Marketing or Marketing-Textiles.

Textile marketing managers are responsible for planning and directing the flow of textile products from the manufacturer to the consumer. The concentration, which provides a strong background in both textiles and marketing, is designed to give students the opportunity to explore the areas of styling and design, manufacturing, market research, consumer behavior, advertising, promotion, fashion, and sales. The specific requirements of the curriculum may be found on pages 52 and 67.

**Urban Affairs.** The undergraduate program in Urban Affairs consists of seven different interdepartmental degree curriculums, three in the College of Arts and Sciences and four in professional colleges. They aim to provide students with a general understanding of contemporary urban society and the opportunity to pursue specialized study of urban problems and prospects from the perspective of varied disciplines, whatever may be the students' interests and career objectives.

The seven concentrations are: (1) Urban Social Processes, (2) Policy Formation, and (3) Spatial Development, in the College of Arts and Sciences; (4) Business in the Urban Environment, in the College of Business Administration; (5) Urban Engineering, in the College of Engineering; (6) Home Economics in the Urban Environment, in the College of Human Science and Services, and (7) Resource Development in the Urban Environment, in the College of Resource Development.

The curriculum in each area of concentration consists of a common core of courses and specialization courses. All students are required to take URB 210 and URB 498 or 499. In addition, they must select three courses from the following: CPL 410, PSC 460, GEG 411, ECN 402, SOC 434, and HIS 363. The specialization courses are detailed in the appropriate college section under each area of concentration in this bulletin.

The Urban Affairs Program is coordinating its offerings with the Department of Social Sciences at the Community College of Rhode Island. Students at the junior college are encouraged to consult with their advisers if they wish to transfer to any one of the concentrations in the College of Arts and Sciences.

The Urban Affairs Program Coordinating Committee includes faculty members from departments throughout the University and supervises the operation of the program. With the endorsement of the faculty of the college concerned, the committee certifies completion of the concentration requirements for the appropriate undergraduate degree. A member of the committee serves as adviser for each of the seven concentrations and provides interested students with information.

**Women's Studies.** This program is designed for students who are interested in the interdisciplinary study of the culture and experiences of women. Courses are currently offered in three different colleges and nine different departments in order to provide a wide perspective. For a complete description of the curriculum see page 46.

## Preprofessional Preparation

Competition for places in graduate professional schools is keen, and a superior academic record throughout college is necessary for admission to these schools. Since requirements for the professional schools vary in their "essential" and "recommended" subjects, the student should consult the catalog of the professional school and then plan his or her undergraduate program accordingly. Those seeking careers as social workers may enroll as majors in sociology, including in their curriculum the social welfare courses. A basic foundation for graduate study, whether directed toward college teaching or research careers, can be provided through any of the liberal arts or science majors. The bachelor of arts curriculum provides specific majors for those planning to become journalists or public school teachers.

**Prelaw Studies.** For students who plan professional study of law, guidance and program advice are provided by departmental advisers assigned in University College and by concentration advisers within various departments and colleges.

Students interested in law school should consult the *Prelaw Handbook*, prepared by the Association of American Law Schools and the Law School Admissions Council. The association finds it inappropriate, given the wide range of a lawyer's tasks, to prescribe either a set of prerequisite courses for prelaw students or preferred major departments. Rather, it recommends that students choose their majors dependent upon their own individual intellectual interests and upon "the quality of undergraduate education" provided by various departments and colleges. "Shortly stated, what the law schools seek in their entering students is . . .

accomplishment in understanding, the capacity to think for themselves, and the ability to express their thoughts with clarity and force." The association emphasizes that "the development of these fundamental capacities is not the monopoly of any one subject-matter area, department or division."

**Premedical Studies.** For students who plan professional study in medicine, guidance and program coordination is provided by the premedical adviser and the Premedical, Predental, Preveterinary Advisory Committee.

The student should consult the prerequisites for professional schools to which he or she may expect to apply for admission. These are listed in *Medical School Admission Requirements*, published annually by the Association of American Medical Colleges.

Medical schools generally require at least a 3.3 grade point average and high scores on the required Medical College Admission Test (MCAT), taken preferably in the spring semester of the third undergraduate year.

The new MCAT was given for the first time in the spring of 1977. From an evaluation of the distribution of scores after this first administration of the test, it is reasonable to assume that successful applicants to medical schools will rank in the intervals

above 10 in the 15-interval scoring system.

All candidates must have personal interviews with the Premedical, Predental, Preveterinary Advisory Committee. Normally these interviews will take place during the spring semester of the third undergraduate year.

Since only about 27 of each 100 applicants to medical schools are admitted, it is wise to plan for an alternative career.

**The University of Rhode Island-Brown University Early Identification Program for Rhode Island Residents.** This is a plan for the early identification and acceptance into the program in medicine at Brown University of highly motivated, exceptionally qualified and interested students at the University of Rhode Island and at Providence College. The plan offers virtual assurance of a position in Brown's program in medicine, so long as the student completes the required courses and maintains a good academic performance. The program is designed to encourage a few of the most highly motivated students, who are Rhode Island residents, to make an early commitment to the study of medicine at Brown by providing them with acceptance assurance similar to that afforded students entering Brown's medical education program directly from high school.

URI students with cumulative averages of 3.5 and above are interviewed and evaluated by the URI Premedical, Predental, Preveterinary Advisory Committee after the completion of their freshman year. Certain of these students are then recommended by the URI Premedical Adviser on the basis of an *excellent academic record, exceptional promise* as a premedical student, *apparent suitability* for the profession of medicine, *Rhode Island residency* and a desire to study medicine at Brown. At the beginning of their sophomore year, these nominated students are interviewed and their applications are evaluated by the Medical Education Program Undergraduate Affairs Committee of Brown University.

Upon acceptance, they have the same status as their Brown counterparts, while continuing their studies at the University of Rhode Island. Like the Brown students, they are free to major in the arts or humanities, if they wish, as long as they complete the required premedical courses. As undergraduates they are also invited to take one or two of their premedical courses on the Brown campus with their future classmates, and are invited to colloquiums and various social events sponsored by the Brown Medical Student Society.

After the students in the Early Identification Program have been graduated from URI, at the point of entering the first year of the program in medicine, they go through the same promotions process required of all medical education program students. Academic performance, interviews with members of the Admissions Committee, Medical College Admissions Test (MCAT) scores, and faculty recommendations are all reviewed. Upon promotion they become full-fledged first-year medical students at Brown University.

**Predental Studies.** The recommendations for premedical preparation also apply to predental students, who are counseled by the same advisory committee.

The student should consult the course requirements for each dental school to which he or she may expect to apply for admission. These are listed in *Admissions Requirements of American Dental Schools*, published annually by the American Association of Dental Schools.

The Dental Admissions Test (DAT) is required, and normally this test is taken in the spring of the third undergraduate year. Competition for admission into dental school is nearly as keen as that experienced by premedical students. Thus, an excellent academic record, along with a 5 or 6 in each section of the test, usually is required.

Each candidate must have personal interviews with the Premedical, Predental, Preveterinary Advisory Committee. Normally these interviews will take place during the spring semester of the third undergraduate year.

**Premedical and Predental Curriculum.** A premedical or predental student may choose to study in any liberal arts or science curriculum, so long as the courses that are required by medical schools are included. Most students major in one of the biological or health sciences or in a related field, such as pharmacy or chemistry.

A recommended course of study is outlined below. Italicized items are *indispensable* for admission to any medical or dental school. Ideally, these courses, or their equivalents, should be substantially completed before the MCAT or the DAT is taken.

Chemistry. At least 16 semester-hour credits, including *general inorganic,* qualitative and quantitative analysis, and *organic;* physical chemistry is sometimes required and is frequently recommended: *CHM 101, 102, 112, 114, 212, 227, 228, 226;* and in some cases 431 and 432, each with the associated laboratory.

Biology. At least 11 credits, including *general animal biology,* embryology, physiology or anatomy, genetics: ZOO *111,* 316, 321 or 345, BOT 352.

Physics. *At least 8 credits including PHY 111, 112.*

Mathematics. At least 6 to 9 credits, through calculus, MTH 141, 142.

English and Communications. At least 12 credits, *including WRT 101, 102 and a year of literature.*

Modern Foreign Language or Greek or Latin. Through the intermediate level.

Social and Behavioral Studies. At least 6 credits. Psychology: PSY 113. Sociology: SOC 202.

**Preveterinary Studies.** Students who are interested in preparing for a professional career in veterinary medicine are counseled by the Premedical, Predental, Preveterinary Advisory Committee. Requirements for admission into the study of veterinary medicine vary and the catalogs of veterinary schools should be consulted for specific requirements early in a student's undergraduate years. Many schools require the Veterinary Aptitude Test (VAT) or the Graduate Record Exam (GRE). Ordinarily, either test should be taken in the spring semester of the third undergraduate year. Moreover, some experience in the animal sciences is expected by some veterinary medical schools.

A preveterinary student may choose to follow the Bachelor of Science cur-

riculum in Animal Science (described elsewhere in this *Bulletin*), or he or she could be guided by the course of study recommended above for premedical and predental students.

Each candidate must have personal interviews with the Premedical, Predental, Preveterinary Advisory Committee. Normally these interviews will take place during the spring semester of the third undergraduate year.

Competition for admission into schools of veterinary medicine is extraordinary. Therefore, evidence of high motivation and an outstanding academic record are essential.

## Honors Program

The University Honors Program offers bright and motivated students opportunities to broaden their intellectual development and to strengthen their preparation in their major fields of study. The program consists of honors courses for freshmen, an honors colloquium for sophomores, tutorial courses for juniors and individual honors projects or special seminars for seniors. The courses offered in the first two years treat general topics and may count toward the satisfaction of general education requirements. The courses offered in the last two years are specialized in nature and count towards the satisfaction of concentration requirements. Eligibility standards are established yearly by the Honors Program and Visiting Scholars Committee.

In order to graduate with honors, a student must complete, with a QPA of 3.0 or better, at least 15 credits of course work in the Honors Program, including the third year tutorial (6 credits) and the fourth year honors project or special seminar (6 credits). However, eligible students may register for any number or pattern of honors courses they choose.

## University Year for Action

This program provides a full-time one or two semester internship experience for students interested in public service careers. It is especially designed for the gifted student who wishes to combine classroom learning with a field experience apprenticeship. Students may apply from any undergraduate curriculum which permits 15-30 credits of free electives to be used for an internship. Placements are available in mental health, social services, community planning, urban affairs, nutrition, women's studies, law, public health, resource management, and many other fields. To apply, students must have junior or senior standing and a minimum QPA of 2.50.

## Dean's List

Full-time undergraduate students who have achieved certain levels of academic excellence in any semester are honored at the end of that semester by inclusion of their names on the Dean's List. The Registrar will publish lists of students who have attained the required quality point average.

A student may qualify for the Dean's List if he or she has completed 12 or more credits for letter grades in a semester. Freshmen and sophomores shall qualify by achieving a 3.0 quality point average; juniors and seniors, a 3.2 quality point average.

## Intellectual Opportunity Plan

This "pass-fail" plan encourages undergraduate matriculated students to increase their intellectual breadth and discover aptitudes in new areas of knowledge. A student above the freshman level who is not on probation may register under this plan for courses considered by the college in which he or she is enrolled as free, unattached electives. Courses that are stipulated in the student's curriculum as degree requirements, general education requirements, and military science courses may not be included.

A student choosing to take a course under this plan must notify his or her adviser, academic dean and the Registrar's Office in writing, prior to the end of the add period of each semester. The instructor is not informed.

Grades will be S (satisfactory) or U (unsatisfactory). The S grade is credited toward degree requirements, but not included in the quality point average. The U grade is not credited and is the equivalent of an F grade in calculation of quality points. If a student has selected the S/U option for a course, then decides not to use the S/U option, he or she may change by notifying the Registrar before the last date for dropping courses.

A student may elect not more than three S/U courses each semester and not more than two S/U courses during a summer.

## Reserve Officers Training Corps

The Military Science Department offers the ROTC Program which enables any college student to earn a commission in the United States Army while simultaneously earning a college degree. A four-year program exposes the military science student to military history, international relations, leadership, management, and the principles of effective organization. A laboratory period allows students to put into practice the theory presented in academic instruction. Credit toward graduation is received for all classroom instruction and, for the final two years of instruction, each student receives a monthly stipend of $100. Those enrolled in military science courses are also eligible to compete nationally for full Army ROTC scholarships.

A modified two-year program is available to sophomores and graduate students which substitutes a six-week summer training period or an on-campus six-credit summer program for the first two years of study. An ROTC graduate has the option to serve a three-year duty tour in the Active Army or a six-year, part-time tour in the Army Reserve Force.

## Grades and Points

All grades are reported as A, superior; B, good, above average but not superior; C, average; D, low grade, below average, passing; F, failure; S, satisfactory; U, unsatisfactory.

Grades are given quality point values as follows: A, 4 points; B, 3 points; C, 2 points; D, 1 point; F, S and U, 0 points.

A grade may be reported as "incomplete" only when course work has been passing but has not been completed due to illness or another reason which in the opinion of the instructor justifies the report of incomplete. Incomplete grades that are not removed from an undergraduate student's record by the following mid-semester will remain on the student's permanent record.

Making up failures in elective courses is not required, but making up failures in required courses is. The course should be repeated when next offered. No limit is placed on the number of times a course may be repeated, but the credit requirement for graduation is increased by the number of credits repeated.

Certain courses do not lend themselves to precise grading and for these courses, only S (satisfactory) or U (unsatisfactory) shall be given to all students enrolled. S/U courses shall be labeled as such in the University catalogs and bulletins. S/U courses are not counted as courses taken under the Intellectual Opportunity Plan.

**Probation and Dismissal.** A student shall be placed on scholastic probation when his or her cumulative scholastic average falls below 2.0 after completing 23 or more credits, but not if he or she has a deficiency of four (4) or fewer quality points below a 2.0 average after completing 22 or less credits.

A student shall be dismissed for scholastic reasons when he or she has a deficiency of eight (8) or more quality points below a 2.0 average after being on probation the previous semester. A freshman student who earns less than a 1.0 average in his or her first semester shall be automatically dismissed. A student subject to dismissal shall be so notified by the dean, after which he or she shall have five days to file a written appeal with the dean.

Students are expected to be honest in all academic work. A case of cheating or other form of academic dishonesty, such as plagiarism, shall be reported by the academic dean of the college or school in which the student is enrolled to the Director of Student Relations who shall arrange for a hearing by the University Board on Scholastic Integrity. Procedures for such a hearing are described in the *University Manual*.

## Withdrawal from College

An undergraduate student wishing to withdraw from the University at any time other than at the end of semester is required to secure a "withdrawal form" from the Office of Counseling and Student Development. This form, when completed, is taken to the Office of the Bursar for settlement of account.

A student who leaves the University during the course of a semester without officially withdrawing may get grades of failure in his or her courses.

If a student officially withdraws from the University after mid-semester, a symbol of "W" shall be recorded for each course in which he or she was registered. A student who withdraws from the University and seeks readmission for the next semester, may be readmitted only upon approval by the Scholastic Standing Committee for the college or school in which registration is desired.

## Undergraduate Graduation Requirements

To graduate, a student must have completed the work for, and must have achieved the minimum quality point average established by, the curriculum in which he or she is enrolled. Total quality points earned must equal at least twice the total number of credits for which the student has registered in that curriculum.

A transfer student who has met the requirements for two degrees and has taken an additional 30 hours (24 of which must be taken at the University of Rhode Island) beyond the minimum requirements for the initial degree may be granted an additional bachelor's degree.

Any student who has met the requirements for a second bachelor's degree and has completed an additional 30 hours of credit beyond the minimum requirements for the initial degree may be granted two bachelor's degrees.

Students who have met the requirement for two separate concentrations within any single bachelor's degree curriculum have earned a double major and may have both fields listed on their permanent records.

A maximum of ten full semesters in one four-year curriculum will be allowed any student for graduation.

Exceptions to the requirements in the above paragraphs may be made upon recommendation by the college concerned.

Except in special cases, which shall be considered by the faculty of the college in which the student is registered, the work of the senior year must be taken in residence.

Students who complete at least 60 credits of their work at the University are eligible to graduate with distinction. Those who attain a cumulative quality point average at the time of graduation of at least 3.30 will be recognized as graduating "with distinction." Those who achieve a quality point average of 3.50 will graduate "with high distinction" and those who attain a 3.70, "with highest distinction."

A student who has successfully completed six semesters at the University in the curriculum in which he or she is registered, and then enrolls in an accredited professional college and receives a recognized professional degree, may apply for the degree of Bachelor of Science from the University of Rhode Island. The award if approved, will be made at the next regular commencement. For veterans, only four semesters in residence are required. The other two may be fulfilled by the service record evaluated in terms of University credit.

## University Manual

University regulations governing matters such as grading, probation and dismissal, academic integrity, withdrawal from college, and graduation requirements are fully explained in the *University Manual*. Copies of the *University Manual* are available in the Library and in the deans' offices.

# Admission and Registration

## Admission to the University

Ideally, admission to the University is a mutual selection process. It is hoped that those students who seek admission will also be the kind of students sought by the University: those who will benefit from the educational opportunities afforded by the University, those who will be stimulated and challenged by doing undergraduate work in an environment that includes scholarly research and graduate study; those who are committed to becoming contributing members of the University. Students are selected for enrollment primarily on the basis of their academic competence and without regard to age, race, religion, color, sex, creed, national origin, or handicap.

Candidates must meet the unit requirements of the University College as listed below for entrance to the University. Furthermore, to meet the requirements for entry to any of the other colleges in the University at the sophomore or junior level, applicants must complete the additional units recommended by the particular college to which transfer is intended. See page 29 for description of the University College.

Applicants are given individual consideration, but it is expected that all candidates will offer 16 units of college preparatory work as outlined below. If these requirements are not fully satisfied by secondary school study, they may be met wholly or in part by successful performance on appropriate examinations administered by the College Entrance Examination Board, the University, or the State Department of Education.

### Unit Requirements

*University College* requires 4 units in English, 2 in algebra and/or plane geometry, 1 in physical or natural science, 1 in history or social science, and 8 additional units as specified below for individual colleges.

*Arts and Sciences* requires 4 units in English, 2 in mathematics (2 in algebra or 1 in algebra and 1 in plane geometry), 1 in physical or natural science, 1 in history or social science, 2 in any single foreign language, and 6 additional units. Majors in chemistry and physics require 4 units of mathematics.

*Business Administration* requires 4 units in English, 3 in algebra and plane geometry, 1 in physical or natural science, 2 in history or social science, and 6 additional units.

*Engineering* requires 4 units in English, 4 in mathematics (algebra, plane and solid geometry, and trigonometry), 1 in physics and 1 in chemistry, 3 in history, social science and/or foreign language, and 3 additional units.

*Human Science and Services* requires 4 units in English, 2 in algebra and/or plane geometry, 1 in physical or natural science, 3 in history, social science, and/or foreign language, and 6 additional units.

*Nursing* requires 4 units in English, 2 in algebra and/or plane geometry, 2 in physical or natural science, 1 in history or social science, and 7 additional units.

*Pharmacy* requires 4 units in English, 3 in algebra and plane geometry, 2 in physical or natural science, 1 in history or social science, and 6 additional units.

*Resource Development* requires 4 units in English, 2 in algebra and/or plane geometry, 1 in physical or natural science , 1 in history or social science, and 8 additional units.

It is strongly recommended that additional units be selected from languages, history, mathematics, or science.

**Application Procedures.** Students should discuss their plans for study at the University with their academic counselors as early as possible to establish realistic goals and program selections. Admissions counselors at the University will be glad to correspond with students on individual problems. Requests for application forms and information should be directed to the Office of Admissions, University of Rhode Island, Kingston, RI 02881.

Applications and requests for admission information from international students should be addressed to the Director for International Student Affairs, 37 Lower College Road, University of Rhode Island.

Students are enrolled at the beginning of the fall semester in September and at the beginning of the spring semester in January. High School seniors are urged to submit applications early in their final year of preparatory study as the University subscribes to a "rolling" admissions policy, reviewing folders as soon as complete credentials are submitted. However, some applicants find it to their advantage to hold their forms until senior mid-year grades are available, so that their progress in the last year may be assessed by the Selection Committee. Closing date for fall term applications is March 1, and most decisions are reported in February, March and April. Closing date for spring term application is December 1.

*Early decision* is made on the application of any freshman candidate who has established a superior academic record, who has achieved above-average scores on the CEEB Scholastic Aptitude Test, and whose potential as a superior student is reflected in the secondary school endorsement. Applications which meet these qualifications and which are clearly labeled "Early Decision Candidate" are considered on a priority basis if filed prior to November 1.

Applicants to the Bachelor of Music degree program must audition and must contact the music department for specific requirements.

**Entrance Tests.** All freshman candidates for admission are required to take the Scholastic Aptitude Test. This test is administered by the College Entrance Examination Board. Applicants who have been away from formal studies for at least three years should contact the Admissions Office concerning entrance requirements.

Applicants are encouraged to take the SAT as early as possible in their senior year; delay beyond January date materially reduces a candidate's prospects for a timely decision. Full information concerning this test may be obtained from local high schools or by writing to CEEB Headquarters at P.O. Box 592, Princeton, New Jersey 08540.

Applicants for the curriculum in dental hygiene are required to take the SAT and the Dental Hygiene Aptitude Test. Full information concerning this test may be obtained from the University Office of Admissions or from the American Dental Hygienists' Association, 211 East Chicago Avenue, Chicago, Illinois 60611.

International students who are not immigrants must take an English proficiency test administered by the American Consulate or the Test of English as a Foreign Language (TOEFL) administered by the Educational Testing Service, Princeton, New Jersey 08540, U.S.A. Additionally, the Scholastic Aptitude Test is required as outlined above. English placement tests are required of all incoming undergraduate students.

**Interviews.** Personal interviews are not part of the normal admissions procedure. It would be impossible for the admissions staff to interview all candidates, and individual conferences are arranged only if a unique problem requires personal discussion.

*Group conferences* are scheduled several afternoons each week during the fall and early winter months. Students and their parents are invited to participate in these meetings to get acquainted with the University. Visitors are requested to phone ahead (401-792-2164) to be scheduled for these meetings.

**Campus Tours.** The University provides daily tours of the campus for visitors, Monday through Saturday, while classes are in session. The tours are conducted by students. Group tours for high schools and other organizations may also be arranged. For more information about this service phone (401-792-2737).

**Early Admission.** Students who have completed their junior year of high school with superior records are eligible for early admission. A part-time study program may be arranged for students who wish to begin college study in their senior year while continuing their high school work. A full-time program may be arranged for those recommended for college admission without completion of the standard preparatory program.

Early admission students would normally have completed: 3 years of English, 3 years of mathematics, 2 years of foreign language, 2-3 years of social studies or history. Students should be academically competitive within their high school class, have corresponding scores on the College Board PSAT, SAT or equivalent tests, and the endorsement of their school.

Interested persons should plan with their high school counselor early in their junior (11th) year and direct further inquiries to the University Admissions Office.

### Advanced Standing

*Advanced placement for freshmen* is granted to students who have completed college-level courses in a high school participating in the Advanced Placement Program and have passed with a grade of 3 or better the CEEB Advanced Placement Examination in the subject area for which advanced placement is sought. In addition, students also may take proficiency examinations administered by departments of the University to be granted advanced placement. Entrance with advanced standing can accelerate the completion of degree requirements, or it can enrich the undergraduate program with greater scope for elective or advanced courses.

*Transfer students* who have attended, or are attending another college or university, are required to have official transcripts sent directly from the institution, whether or not they expect or desire credit for such work; their high school record must also be submitted. Most successful applicants offer a cumulative grade point average above 2.5. Except in very unusual circumstances, candidates incurring academic or disciplinary dismissal from other colleges are not eligible for admission. Candidates accepted with transfer credit are classified as freshmen, sophomores, juniors, or seniors according to the number of credits accepted for transfer. The transfer of General Education credits is described on page 10.

**Proficiency Examinations.** Students who show evidence of advanced knowledge or who have taken "enriched" programs in high schools may be exempt from certain courses and requirements if they take departmental proficiency examinations. A student who successfully passes such an examination earns credits as well as exemption from the course.

Upperclassmen interested in taking these exams should contact their academic dean. New students may obtain further information during the orientation or from their assigned adviser in University College.

**College Level Examination Program.** *CLEP General Examinations.* Students who have not been pursuing formal studies for at least three years may take the CLEP General Examinations to demonstrate what they have learned from a variety of life experiences. URI students must secure prior approval from their academic dean to take the exams for credit. Transfer students may receive credit from CLEP General Examinations taken prior to enrollment at URI provided that their scores meet URI standards and provided that their academic dean judges that the CLEP credit does not duplicate other transfer credit.

CLEP General Examinations may be taken in the following areas (URI credits for these are shown in parentheses):

| | *Minimum score* |
|---|---|
| English Composition (English composition elective 3 credits[1]) | 560 |
| Fine Arts (Fine Arts elective, 3 cr.) | 46 |
| Literature (Literature elective, 3 cr.) | 45 |
| Biological Sciences (Natural science elective, 3 cr.) | 46 |
| Physical Sciences (Physical science elective, 3 cr.) | 44 |
| Social Sciences (Social science elective, 3 cr.) | 46 |
| History (History elective, 3 cr.) | 45 |
| Mathematics (no credit) | |

*CLEP Subject Examinations.* Academic departments may use CLEP Subject Examinations as proficiency exams to test students' mastery of the subjects taught by the department. A department which judges a CLEP Subject Examination to be a satisfactory proficiency exam decides what credit should be awarded within the department to students who pass the exam, establishes the minimum score for credit, decides whether students must answer the optional essay questions supplied by CLEP, and decides whether students must pass a supplementary department test, such as a lab exam. The following CLEP Subject Examinations are accepted by departments as proficiency examinations.

| *Subject (URI credit)* | *Minimum raw score* | *Minimum percentile* |
|---|---|---|
| Afro-American History[2] (HIS 150) | 49 | 47th |
| American Government (PSC 113) | 47 | 38th |
| American History[2] (HIS 141, 142) | 46 | 40th |
| American Literature (ENG 241, 242) | 46 | 37th |
| Analysis & Interp. of Literature (ENG 103) | 49 | 43rd |
| Biology (BIO 101, 102) | 49 | 47th |
| Calculus w. Anal. Geom. (MGS 102) | 49 | 50th |
| College Algebra-Trig. (MGS 101 or MTH 109) | 49 | 50th |
| Educational Psychology (EDC 312) | 47 | 40th |
| Elem. Comp. Prog./ FORTRAN IV (MGS 107) | 51 | 50th |
| English Literature (ENG 251, 252) | 46 | 38th |
| General Chemistry (CHM 101, 102, 112, 114) | 47 | 45th |
| General Psychology (PSY 113) | 47 | 39th |
| History of American Education (EDC 102) | 46 | 36th |
| Human Growth & Devel. (HCF 200 or PSY 232) | 47 | 38th |
| Introd. to Business Management (MGT 301) | 50 | 50th |
| Introductory Accounting (ACC 201, 202) | N/A | 50th |
| Introductory Business Law (BSL 333) | 51 | 50th |
| Introductory Marketing (MKT 323) | 50 | 50th |
| Microbiology[3] (MIC 201) | 48 | 45th |
| Statistics (MGS 201) | 51 | 50th |
| Tests and Measurements (EDC 371) | 46 | 37th |
| Western Civilization[2] (6 cr. HIS below 300) | 50 | 52nd |

**Readmission.** Students formerly enrolled at the University and seeking reentry may obtain applications for readmission at the Office of the Registrar. Readmitted students are subject to a $15 application fee and must make a $50 advance deposit. All applications for readmission must be submitted to the Office of the Registrar no later than August 15 for the fall semester and December 31 for the spring semester.

**Health Questionnaire.** Every newly entering student is provided a health questionnaire from University Health Services. It is expected that these questionnaires will be completed and returned promptly. This questionnaire provides University Health Services with basic information prior to the student's arrival on campus. Questionnaires are distributed only after admission to the University and therefore play no part in the process of acceptance to the University.

In accordance with Section 16-38-2 of the General Laws of Rhode Island, the University must have a certificate signed by a licensed physician giving proof of rubella (German measles) immunity for each new female student between the ages of 15 and 35.

**New England Regional Student Program.** Under the cooperative plan of the New England Board of Higher Education (NEBHE), students from other New England states are admitted to certain curriculums at the University of Rhode Island which are not offered in their own states. Certain programs at other New England state universities are open to Rhode Islanders on a reciprocal basis. Regional students at the University will be charged the in-state fee plus a surcharge of 25 percent. However, if the student transfers out of the program of study that qualifies under the New England Student Program, out-of-state fees will apply. Details on the operation of this program are available on request from the New England Board of Higher Education, 68 Walnut Road, Wenham, Massachu-

[1]Three additional credits may be earned by completing a writing sample test administered by the College Writing Program.

[2]Optional essays required

[3]Department lab test required

setts 01984, or high school guidance offices. The Office of the Registrar provides information pertaining to this program for students who are already enrolled at the University.

Prospective students who wish to claim eligibility for this program must state so in the appropriate section on their application for admission. Continuing or returning students claim eligibility by contacting the Registrar's Office with a formal request prior to the end of the add period of the semester in which regional status is to be effective.

**Special Program for Talent Development.** The University encourages the application of economically and socially disadvantaged individuals from Rhode Island and has instituted a prematriculation program designed to assist such applicants whose education is below college preparatory level. There is special financial provision for students in this program. Interested individuals should apply to Special Programs for Talent Development, Taft Hall, as early as possible in their senior year in high school. High school graduates or those with an equivalency diploma are also encouraged to apply.

## Registration

All students must register for courses at the Registrar's Office in order to be properly enrolled.

**Preregistration.** The University preregisters matriculated (official degree-seeking) students who meet the eligibility requirements as defined in the *Schedule of Courses*. Preregistration generally occurs in March and October for the following semester. However, freshmen entering in the fall semester preregister at specified dates during the summer. Additional information is available from the Office of the Registrar.

**Registration Day.** This is held the day before classes begin for both the spring and fall semesters. All matriculated students who did not preregister (or who did not receive a final schedule) must register at Keaney Gymnasium on this day.

**Late Registration.** Matriculated students who are unable to register at Keaney will be required to register late, beginning on the first day of classes and continuing no later than the end of the published add period. Such students must pay a $15 late registration fee during the week in which registration day falls; $50 thereafter.

**Non-matriculated Students.** Such students must apply each semester to the Admissions Office for permission to enroll and for registration instructions. Registration takes place during the first week of classes.

**Payment of Fees.** Arrangements must be made with the Bursar for complete payment of tuition and/or fees. If, at any time during the semester, it becomes apparent that a student has not met his or her financial responsibilities with the University, the registration for that semester is subject to immediate and irrevocable deletion. Class schedules will be issued only for those students who have registered for courses and satisfied payment requirements with the Bursar by the announced due date. Students who have not satisfied payment requirements by the announced due date will have their preregistration class schedules irretrievably cancelled and will be required to register on registration day.

**Drop and Add.** Students are permitted to add courses during the first two weeks of classes.

Any course may be dropped, by official procedures determined by the Registrar, before the second weekday prior to the end of the add period (the third weekday, if the add period ends on Monday). During the two or three days before the end of the add period, a course may by dropped only if another course is simultaneously added.

It is the student's responsibility to notify the instructor and/or the department by the second class meeting if he or she intends to remain enrolled. Otherwise, the seat may be assigned to another student.

**Audit.** An auditor may be admitted to class on a space-available basis with the consent of the instructor as indicated by the instructor's signature on an audit authorization form which must be filed in the Office of the Registrar. The course instructor shall determine the extent to which an auditor may participate in class activities. An auditor's name shall not appear on official class rosters, on the grade report, nor will the course be posted to the student's permanent record.

**Flexible Scheduling.** Simultaneous enrollment in Kingston classes and College of Continuing Education classes may give scheduling flexibility to students with special time and location restrictions. Students should consult their academic adviser or college dean for further information.

**Off-Campus Study.** A full-time student who wishes to study at another college or university and use that course work to satisfy graduation requirements at the University of Rhode Island must register for off-campus study with the Registar to ensure that grades and credits will be accepted. The student must obtain signed approval for the off-campus courses from the dean of his or her college. Off-campus study includes summer sessions, one or two semesters at another American university, or study abroad. A student may not ordinarily study off campus during the senior year. Students who wish to maintain registered status and preregistration eligibility while studying off campus, must register for off-campus study for each semester of absence from the University of Rhode Island campus.

**Student Exchange Program.** Any full-time student matriculated at the University of Rhode Island, Rhode Island College, or Community College of Rhode Island may enroll for a maximum of seven credit hours of his or her full time schedule per semester for study at one of the other public institutions at no additional expense. Students will be subject to the course selection process at the receiving institution. Summer Session and Continuing Education registrants are not covered under this program.

Information regarding this program is available at the Office of the Registrar.

**Study Abroad.** Students who participate in study abroad programs sponsored by the University of Rhode Island or other institutions may receive credit for coursework and retain their status as matriculated students by obtaining signed prior approval for their courses and registering for off-campus study for each semester of absence from the University of Rhode Island campus. Information regarding these procedures is available from the Study Abroad Adviser, University College, Roosevelt Hall.

**Veterans' Educational Benefits.** Full information describing these benefits may be obtained from your base education officer or from the Veterans Administration Regional Office, 321 South Main Street, Providence, Rhode Island 02903. A toll-free number is available for inquiries by asking the long distance operator for Enterprise 5050.

Veterans who are eligible and who wish to receive VA educational benefits must notify the Office of the Registrar in person. In order to satisfy Veterans Administration regulations, all students who receive VA educational benefits must report all changes in academic status to the veterans' registration clerk in the Office of the Registrar.

Recipients of VA educational benefits are also governed by the same University policies as all other students and are, therefore, responsible for completing those procedures described in the *Schedule of Courses* for effecting changes of status (adding and dropping courses, changing address, withdrawing from the University, etc.).

*The University Manual*, the *Graduate Student Manual*, and the *Students' Guide to URI* further explain the University's policies and procedures concerning the following: 1) the grading system and standards of progress required of the student by the University and the conditions for dismissal for unsatisfactory grades; the allowed probationary period, and the conditions of reentrance for academically dismissed students (See: *University Manual*, Chapter 8; *Graduate Student Manual*, Appendix A; *Students' Guide to URI*, Section 2). 2) the records of academic progress maintained by the University and furnished to the student (See: *University Manual*, Chapter 8; *Graduate Student Manual*, Appendix C; *Students' Guide to URI*, Section 2). 3) the policies and regulations relating to student conduct and conditions for dismissal for unsatisfactory conduct (See: *University Manual*, Chapters 5 and 6; *Graduate Student Manual*, Appendix A; *Students' Guide to URI*, Section 2).

**Change of Address.** It is the responsibility of the student to complete a change of address form in the Office of the Registrar whenever a change is made in his or her local, campus, or mailing address.

# Expenses and Student Aid

## Expenses

*Charges and fees set forth in this bulletin are subject to change without notice.*

The total cost for a year of resident study at the University is about $5,000 for citizens of Rhode Island and about $7,600 for out-of-state residents. These figures include $240 for books and supplies, and $732 for miscellaneous personal expenses and travel.

Students commuting to the University from their homes in Rhode Island should anticipate expenses of approximately $4,425 a year. This figure includes $240 for books and supplies, and $2,834 for miscellaneous personal expenses and transportation.

All charges are payable by the semester and are due and payable on receipt of the bill or by the due date indicated on the bill. Checks or money orders should be made payable to the University of Rhode Island.

*Full-time Students Pay Per Year*

| | |
|---|---|
| In-state fee (General fee) | $1,028.00 |
| Out-of-state fee[1] | 3,552.00 |
| Memorial Union fee | 116.00 |
| Student Activity tax | 44.50 |
| Accident and sickness insurance | 57.25 |
| Student Health fee | 122.50 |

[1]See page 18 for exception to this under NEBHE interstate program.

*Students Living in University Residence Halls Add*

| | |
|---|---|
| Room Rent | $1,383.00 to $1,518.00 |
| Board — Monday breakfast through Friday dinner (15 meals) | 1,060.00 |
| or Monday breakfast through Sunday noon (20 meals) | 1,235.00 |

*Students Living in a Fraternity or Sorority Add*

| | |
|---|---|
| Average room rent | $1,180.00 |
| Average board | 1,050.00 |

*Part-time Students*

Part-time students, registered for up to 11 credit hours per semester are charged the fees below:

| | |
|---|---|
| Tuition, per credit hour | |
| Rhode Island residents | $44.00 |
| Out-of-state students | 123.00 |
| Registration fee per semester | 8.00 |
| Memorial Union fee, 1-4 credits | 7.50 |
| 5-11 credits | 15.00 |
| Student Activity tax | 9.15 |

**Resident Student Status.** A student who is a resident of the state of Rhode Island pays the in-state fee, but a student from another state or a foreign country who is in Rhode Island primarily for educational purposes, even though he or she remains in the state during vacation periods, is considered a non-resident and pays the out-of-state fee.

The parents or legal guardians of a minor student must have been residents of the state for one year immediately preceding the first class day of the first term of a student's registration for that student to claim resident student status.

An "emancipated student" must establish the same bona fide residency for in-state tuition exemption. An emancipated student shall mean a student who has attained the age of 18 years, and whose parents have entirely surrendered the right to the care, custody, and earnings of the student and who are no longer under legal obligation to support or maintain him or her. If any of these tests is not met, he or she is presumed to be an unemancipated student. A non-resident student who reaches 18 years of age while a student does not by virtue of that fact alone become a resident student.

Dependents of members of the armed forces, as well as members of the armed forces stationed in the state on military orders, are entitled to classification as resident students.

The Director of Admissions classifies each student admitted to the University as a resident or non-resident student on the basis of all relevant information available to him. A student may appeal the decision to the Board of Residence Review. The above information is merely a summary of the regulations governing student classifications for tuition purposes. The complete text of the regulations adopted by the Board of Regents may be obtained from the Office of Admissions.

**Tuition Waiver for Senior Citizens.** Permanent residents of Rhode Island who are 60 years of age or older are entitled to take courses at the University without payment of tuition, although other fees and charges are still applicable. Admission to particular courses will be granted on a space-available basis. Eligible persons should contact the Office of the Registrar.

**New Student Fees.** A nonrefundable fee of $15 must accompany each application for admission. See page 16 for application procedure.

An advance deposit of $50 is required from every accepted student. The advance deposit, which is applied on the first term bill, will be forfeited if the applicant later withdraws his or her name.

Students returning after an absence of one or more semesters are subject to the same application fee and advance deposit as entering freshmen.

**General Fee.** All students, both resident and nonresident, pay a general fee of $1,028.00 per year. This fee covers the cost of benefits enjoyed by all students, such as use of library, testing services, guidance, personnel supervision, placement, athletics, etc.

**Student Assessments.** Each student is assessed $44 per year which is distributed by the Student Senate to support a wide variety of student programs and activities. A Memorial Union fee of $116.00 per year is also assessed.

**Late Fees and Special Fees.** A late registration fee of $15 is charged to students whose registration is not completed before the first day of classes.

Expenses for class trips in all courses and those incident to practice teaching in vocational education courses are charged to the students concerned.

*Applied Music Fees.* Students taking performance courses in music are charged an additional fee each semester of $60 for 0 credit, $80 for 2 credits, and $120 for 3 and 4 credits.

*Student Nurses' Fees.* Beginning in the sophomore year, student nurses must purchase authorized uniforms and nursing equipment. The approximate cost is $175.

**Transcripts.** Each student who graduates from the University is entitled to one official transcript without charge. The fee for all other transcripts is $2, except that the fee for multiple copies ordered at the same time is $2 for the first copy and $.50 for each additional copy. Copies will be mailed in response to written requests only, which should be addressed to the Office of the Registrar.

Transcripts will not be issued to students who have any unpaid financial obligation to the University.

**Health Service Fees.** The health fee of $122.50 is mandatory for all-full time undergraduates, all international students, and all full-time graduate students. The University requires that all such students be insured through the University's Student Sickness and Accident Insurance unless evidence of comparable coverage in another plan is provided and the student completes, signs, and returns a waiver card to the Bursar's Office by the announced term bill due date. Part-time students and spouses of students are eligible to participate in the health and insurance plan on an optional basis.

The health fee covers all outpatient care at Health Services with the exception of laboratory and X-ray services. Students must have insurance which covers these services.

**Refunds.** Refunds of payments made or credits against amounts due to the University shall be made to students who officially withdraw according to the following scale: during the first two weeks, 80 percent; during the third week, 60 percent; during the fourth week, 40 percent; during the fifth week, 20 percent; after five weeks, none.

The attendance period in which withdrawal occurs is counted from first day of registration and includes weekends and holidays.

The premium for the University Student Sickness and Accident Insurance is not refundable. Coverage extends through August 31 even though the student is no longer enrolled.

**Reassessment of Fees.** Fees are reassessed and adjusted according to the credit enrollment and/or student status resulting from drop/add transactions as processed by the Registrar during the add period. Subsequent to the add period, term bills are only reassessed for part-time students who add credits. The dropping of credits after the add period does not reduce term bills.

**Housing Rates.** Following are the rates for University housing for the year 1981-82. For complete information write to the Director of Residential Life, Roger Williams Commons. All rates quoted are for double rooms. For single rooms, where and when available, $60 per year is added to the double rate. Board is mandatory for students living in residence halls.

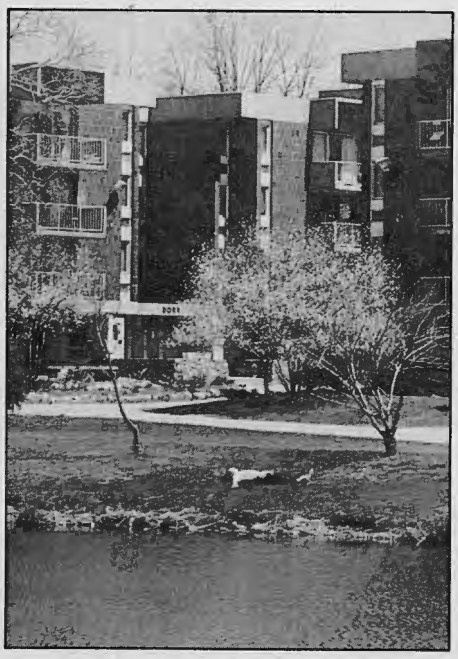
*Residence Halls*

| | |
|---|---|
| $1,383 | Adams, Barlow, Bressler, Browning, Hutchinson, Merrow, Peck, Tucker, Weldin |
| $1,450 | Butterfield |
| $1,518 | Aldrich, Burnside, Coddington, Dorr, Ellery, Fayerweather, Gorham, Heathman, Hopkins |

The average projected room rate (including social fees) for fraternities and sororities for 1981-82 is $1,180. The average projected board rate for fraternities and sororities is $525 per semester.

**Housing and Dining Contract.** University housing is contracted for the *entire academic year.* A deposit of $100 is required at the time of filing application for a room in the residence hall. This deposit will be applied on the first semester bill. A cancellation of the housing application will result in a pro rata credit on the semester bill according to the following schedule: from date of deposit to June 15, $100; from June 16 to the opening of the residence halls for the academic year, $62; after that time, no refunds will be made.

All residence hall rates are quoted for the period specified in the contract. Payments are due in full by the published term bill due date each semester or upon receipt of bill from the Office of Residential Life. Checks and money orders are payable to the University of Rhode Island and should be remitted to the Office of the Bursar.



A student vacating his or her assigned quarters before the end of the period under contract will be held responsible for the total charges for the entire period. No refund will be given when a student moves from University quarters to a private home or decides to commute.

All students living in University residence halls are required to purchase a 15-meal contract for three meals a day, Monday through Friday. A 20-meal contract for three meals a day, Monday through Saturday; brunch and dinner on Sunday are available at the student's option.

Dining contracts begin on registration day and expire the last day of final examinations. They apply each day on which the University schedules classes or examinations according to the meal plan purchased. Meals are not served on holidays.

Students who require diets for health reasons must have their local physician submit a request for the special diet, with the diet prescribed, to the director of Clinical Services, University Health Services, *each semester*. Special diets for other than health reasons cannot be provided.

Parents and guests of students, faculty and staff members, alumni, and guests of the University may purchase guest meal tickets at the dining rooms, or may use student guest coupons from student meal books. Various meal plans are available for commuting students on a semester contract basis. Information is available at the Dining Services Office.

Meal books are issued at registration and billed according to the contract signed. Only students withdrawing from the University will receive Dining Services refunds. Please refer to scale on page 22.

**Indebtedness to the University.** Failure to make full payment of all required fees or to resolve other debts to the University (for example, unreturned athletic equipment, overdue short-term or emergency loans, lost library books, debts to the Office of Residential Life for damages, obligations required by the University Judicial System) may result in the cancellation of preregistration for the following semester, denial of registration until the payment is made, and/or disenrollment. Appropriate University departments will provide the student with notice of the debt, reason for it, and a review, if requested. A student must fulfill all financial obligations to the University before receiving transcripts or a diploma.

## Student Financial Aid

Financial Aid is money made available from federal, state, local, or private sources which helps students attend the postsecondary institutions of their choice. At the University of Rhode Island these varied sources are administered by the Student Financial Aid Office in Roosevelt Hall. The financial aid program is designed to serve students from the widest possible range of society and all students are encouraged to apply.

In most cases financial aid will be awarded in a "package" of grants (which do *not* have to be repaid), loans (which *have* to be repaid), and student employment opportunities (part-time jobs while attending school). The purpose is to assist the students in meeting the costs of attendance at the University of Rhode Island. To continue receiving financial aid it is necessary to re-apply and demonstrate sufficient financial need each year, and maintain satisfactory academic progress.

Financial aid to students is awarded without regard to age, race, sex, creed, national origin, or handicap.

**Determination of Financial Aid.** A student does not have to be from a low-income family to qualify for financial aid, but does have to have "financial need." A "need" is the difference between what it costs to attend the University and what the student and family can contribute from financial resources. The family, insofar as it is able, is expected to bear primary responsibility for financing their son's or daughter's college education, and the student is also expected to earn a portion of the resources for college expenses, usually through summer employment.

**Eligibility.** Only citizens, nationals, or permanent residents of the United States are eligible to apply for financial aid. Foreign students desiring information about financial assistance should contact the Office of International Student Affairs at the University.

To be considered for most types of aid, a person must have been accepted and enroll as a matriculated student at the University. Special students and students attending only during summer sessions are ineligible.

**Application Procedures.** Residents of Rhode Island, Connecticut, Massachusetts, New Jersey, Pennsylvania, or Vermont should complete a Financial Aid Form (FAF) specifically printed for their state. Residents of another state should complete the national Financial Aid Form and *apply for a Basic Educational Opportunity Grant (BEOG) by checking the appropriate box on the FAF*. The Undergraduate Student Financial Aid Application should also be completed and returned to the Student Financial Aid Office in Roosevelt Hall.

Approximately four weeks after filing the FAF, the applicant will receive a Basic Grant Student Eligibility Report (SER). The SER should be submitted to the Student Financial Aid Office even if the student is ineligible for a Basic Grant.

**Application Dates.** The FAF should be mailed to the College Scholarship Service in Princeton, NJ, after January 1 and before February 15. The URI Un-

dergraduate Student Financial Aid Application should be submitted to the Student Financial Aid Office prior to March 1.

Applications completed on or before the above dates will receive first consideration for financial aid awards; however, late applications will be processed as long as funds remain available.

**Federal Aid Available**

*Basic Educational Opportunity Grant (BEOG).* The Basic Grant is designed to form the foundation of all aid received. Each applicant is mailed a Student Eligibility Report (SER) which must be forwarded to the Student Financial Aid Office. The amount of the Basic Grant, with a maximum of $1,900, depends upon the costs at the institution and the number of credits for which the student enrolls.

*Supplemental Educational Opportunity Grant (SEOG).* The SEOG is intended to assist undergraduate students with financial need. SEOG awards are available in amounts ranging from $200 to $2,000 per year.

*National Direct Student Loan (NDSL).* Eligibility is based on need. Undergraduates are limited to borrowing $3,000 for the first two years of their program with a maximum of $6,000 for four years. Graduate students may borrow up to $12,000 including undergraduate loans. These loans have a simple interest rate of 4% annually. Interest does not accrue until six months after graduation or withdrawal. Minimum payments of $30 per month are required, and the repayment period may extend up to ten years.

*Nursing Student Loan/Scholarship Programs.* The Nursing Student Loan is available to students enrolled in the College of Nursing. The long-term low-interest loans become due and payable should the student leave the nursing program for any reason. Both the loans and the federal Nursing Scholarships are designed to assist financially needy students achieve careers in nursing.

*Health Professions Loan Program.* This loan program is restricted to students in the College of Pharmacy. Loans are available to all such students with financial need.

*College Work-Study Program (CWSP).* This federally supported program provides part-time employment during the school term and full-time employment during the vacation periods. The jobs may be either with University departments, or with off-campus, non-profit, non-sectarian, non-political agencies. Other institutionally funded employment is also available. A list of these jobs is available in the Student Financial Aid Office. (Limited funding could curtail the summer employment program.)

*Guaranteed Student Loan Program.* Students may apply for loans under the Guaranteed Loan Program through local lending institutions. Interest on loans, until six months after graduation or withdrawal, will be paid by the federal government. Simple interest of 9% annually is charged once the repayment period begins.

Undergraduate dependent students may borrow up to $2,500 per year with a maximum of $12,500. Undergraduate independent students may borrow up to $3,000 per year with a maximum of $15,000. Graduate students may borrow up to $5,000 per year, with a maximum of $25,000, including undergraduate loans.

In addition, *parents of dependent students* may borrow up to $3,000 per year, with a maximum of $15,000 to help defray educational costs. Annual interest on the parents' loan is 9% and repayment must begin within 60 days after the loan is received.

**University Aid Available**

*University Scholarships.* Scholarship awards require not only financial need, but evidence of high academic potential. Some scholarships have specific restrictions, such as place of residence, major, class year, etc. A list of available scholarships may be found in the Appendix.

*University Grants-in-Aid.* The University provides grants to several hundred students. To be awarded a University grant, the student must have demonstrated financial need, and a satisfactory academic record.

*Regular Student Employment (IPR).* Jobs funded by the University are available to several hundred students. Jobs are listed in the Student Financial Aid Office.

*Athletic Awards.* Athletic awards are made upon the recommendation of the Athletics Department to athletes who meet the established qualifications. These awards, rather than being based on need, are based upon athletic ability. Students interested in such assistance should contact the Department of Athletics.

*University Loans.* Emergency loans of from $10 to $100 are available to full-time students. These loans are short-term in nature (14-90 days), and can be made only when there are means of repayment. Application forms are available at the Student Financial Aid Office.

**Other Sources of Aid**

*Rhode Island State Scholarships and Grants.* Undergraduate residents of Rhode Island who have been accepted for enrollment may be considered for Rhode Island State Scholarships or Grants. While both are based upon need, the scholarships also require a strong academic record in high school. The Rhode Island State Scholarship and Grant Program is administered by the Rhode Island Higher Education Assistance Authority, 274 Weybosset Street, Providence, Rhode Island.

There are many additional sources of financial aid available to students who qualify: scholarships from private organizations, clubs, labor unions, fraternities, sororities, and businesses; Vocational Rehabilitation financial support; Veterans Administration benefits, including survivor benefits; and Social Security benefits. Students should apply directly to the source if they believe they qualify.

A list of the scholarships and loans may be found on page 181. For veterans' benefits see page 20.

# Student Life and Services

An enriching college life has a well-balanced mix of academic and extracurricular activities. The University offers a unique blend of student organizations and activities with emphasis on student-run services and businesses.

## New Student Orientation

Orientation programs which facilitate the students' entry into the campus community are administered by the Office of Counseling and Student Development. New students are taxed a nominal amount to cover such expenses as room, meals and materials associated with their orientation program.

**Summer Orientation Workshops.** All students who are beginning University careers attend a two-day workshop to plan their academic programs, to register for fall classes, to learn what to expect of the University, and to begin to acquire the skills essential to successful transition from high school and home to the University community. These programs are planned to personalize the student's first experience with the University as each one participates, with a group of approximately 15 classmates, in workshop projects. Admitted students receive workshop registration materials in May.

Special programs are planned for parents of new students to coincide with some of the workshop dates.

**Transfer Orientation Programs.** Students transferring to the University from another institution are encouraged to attend workshops planned especially to acquaint them with some of the unique features and procedures of this University. These workshops differ substantially from beginning student programs. They deal with the issues and problems associated with transferring from another educational institution to the University of Rhode Island. Students admitted with advanced standing receive orientation information and reservation materials in May for the June and July workshops and in early January for mid-winter orientation.

**Initial Orientation for International Students.** Programs just prior to the formal beginning of the academic year assist the international student to function effectively, comfortably, and with reasonable initial success in the new environment. Because successful transition to American culture, values, and institutions as well as to American academic life is crucial, new international students are required to attend the program. Full information regarding arrival dates and orientation program costs are mailed to students in the spring. In planning educational budgets, international students should set aside $75 to cover cost of room, meals and program expenses. This expense is in addition to University fees specified in this bulletin.

**Commuter Student Orientation.** A one-day program is held just prior to the start of the fall semester. This special commuter orientation is presented by the Office of Student Life and is designed to address the problems, needs and concerns of new commuter students. Commuter orientation complements the summer orientation workshops and explores commuter-related issues and concerns in more detail.

## Life Styles

**Residence Halls and Dining Centers.** Residence halls and boarding facilities are available to students during both the regular academic year and the Summer Sessions. There are 19 residence halls on campus offering a variety of living accommodations including coeducational housing. Students registering for rooms in the residence halls will have their applications filled in order of receipt. Room assignments will be to the extent of facilities, and roommate requests will be granted when possible. Freshmen are guaranteed space in residence halls if they send in their housing deposit on time. For rates and contracts, see page 22.

Applications for residence hall living should be made to the Director of Residential Life.

Three dining centers are operated by the University for the convenience of resident students. These centers were constructed with private bond funds. To guarantee payment, the University requires all students living in residence halls to purchase a 15- or 20-meal dining contract as described on page 23.

**Fraternities and Sororities.** There are approximately 1,300 fraternity and sorority members living in the 22 nationally-affiliated houses privately owned by alumni corporations. The staff of the Office of Student Life advises these groups. The Greek houses promote scholarship, citizenship, and small-group living. Within the last 14 years, 12 new houses have been built on campus. Purchasing and business management for these houses is provided by a private corporation controlled by the fraternity and sorority members. The average room and board charges for fraternities and sororities is approximately $75 less than for University residence halls and dining centers. Approximately 175 freshmen live in fraternities and sororities each year. Interested freshmen should contact the Office of Student Life.

**Commuting from Family Home.** Approximately 2,000 students commute to the University from home. The advantages of home cooking, privacy, lower costs, and opportunity to keep high school friends are balanced against numerous challenges: acquiring information about all aspects of the University, returning to campus for evening events, transportation problems, and budgeting one's time. Various services are coordinated by the Office of Student Life to meet commuter needs. Dining Services offers special meal plans for commuters; Health Services provides a satellite clinic of preventive services; the Commuter Information and Referral Center, staffed by peer advisers, is a clearinghouse of information providing quick and accurate answers to any questions about University life. A car pool matching service is available in the Memorial Union Ram's Den.

**Commuting from "Down-the-line."** Approximately 2,000 students commute from houses or apartments in the southern Rhode Island area known as "down-the-line." Juniors and seniors often choose to move off campus and live within a ten-mile radius of the campus where summer homes are rented to students for the school year. Typically, a student will pay $75-100 a month, plus utilities, for each bedroom in a furnished house. The majority of winter residents in these down-the-line summer communities are students and they patronize nearby supermarkets, laundromats, restaurants, shopping centers and recreational facilities. Many commute by car pool or bus. The Office of Student Life administers an off-campus housing service along with the commuter services mentioned above. Most services are located in the Commuter Lounge in the Memorial Union.

**Older Students.** Approximately 800 students (10% of the undergraduate population) on the Kingston campus are over 25 years of age. There is a student organization called Older Student Association (OSA) for these men and women who chose not to, or were unable to, attend college right after high school. Some are married, with family responsibilities. Some also have jobs and are part-time students. Some older students are attending school with G.I. Bill benefits. Some have retired from a first career and want to prepare for a second. Older students are encouraged to seek advice from the Admissions Office staff. Programs and services for this group of students are coordinated by the Office of Student Life.

**Minority Students.** Approximately 300 students use the variety of services for minority students. Black students, native American students, Hispanic students, and other minority students have formed special interest groups to further meet their needs. Services are coordinated by the Office of Student Life.

**International Students.** More than 200 international undergraduate students, graduate students, and visiting faculty are advised and served by the Department of International Student Affairs. Assistance is provided in the academic, financial, housing, and social areas. All communication from foreign students concerning applications for admission to undergraduate or graduate programs, non-immigrant visas, and employment are handled by this office.

**Handicapped Students.** Handicapped students are encouraged to notify the Coordinator of Handicapped Services in the Office of Student Life concerning the nature of their handicap before their arrival on campus. Programs and services are coordinated by this office.

## Student Government

The Student Senate is a legislative body which represents the students to the administration and faculty and supervises extracurricular activities. It also distributes the activities tax among the various student organizations through its tax committee. Individual residence halls form their own governments. The Interfraternity Council supervises fraternity affairs and the Panhellenic Association governs sorority life. The Commuter Association provides social and other assistance to commuter students.

## University Judicial System

Administered by the Office of Student Life, the University Judicial System is designed to promote student growth and to preserve the atmosphere of learning necessary to the well-being of all students. Community standards of behavior and University policies for students are published in the student handbook, *Rampages*. The Judicial System receives complaints or allegations from aggrieved parties, the available facts are gathered and evaluated, and the case may be referred for formal judicial action by one of the University judicial boards or by administrative action (if the student admits guilt and chooses administrative action). Sanctions range from "no further action" to suspension or dismissal from the University and may include conditions relating to the nature of the violation.

## Student Activities

More than 120 student organizations are advised by the Student Activities Office staff through consultation services, technical expertise and information. Thousands of students participate in the activities sponsored by these organizations.

**Lectures and Arts Programs.** Lectures and arts programs are presented throughout the year to enrich the more formal academic program of the University. Lectures of general and specialized interest are presented by visiting scholars. The Arts Council, on which faculty, students, and administration are represented, plans programs that include music and dance concerts, film programs, and theatre presentations. Student organizations sponsor a popular entertainment series and bring speakers of national or international prominence to campus. These are supported by student funds.

**Student-run Businesses.** The Student Senate business arm, called Kingston Student Services, controls and operates a variety of student-oriented businesses from a record and film shop in the Memorial Union and the campus youth hostel (primarily for commuters) to a used book exchange. Other student-controlled businesses include the fraternity and sorority cooperative buying service and the various residence hall cooperatives for purchase of food and sundry items, and management, with some full-time help, of the multi-thousand dollar food services in the Memorial Union.

**Athletics.** The University offers an extensive program of athletics, sufficiently varied to provide an opportunity for every student to participate. The Tootell Physical Education Center and the Keaney Gymnasium provide excellent facilities, including three pools, three gymnasiums, three weight training rooms, and a modern athletic training room. A bubble air structure covers an indoor track and is connected to the Keaney building. The outdoor facilities include the newly renovated Meade football stadium, 21 tennis courts, two softball diamonds, a baseball field, a lighted lacrosse/soccer field, a new all-weather track, a field hockey field, and numerous practice fields for recreation and competitive activities.

Men's intercollegiate teams participate in baseball, basketball, football, golf, soccer, swimming, tennis, cross country, and indoor and outdoor track.

In addition to membership in the Eastern Athletic Association, the University holds membership in the Yankee Conference (football) and the National Collegiate Athletic Association.

The women's intercollegiate teams participate in Division I basketball, field hockey, gymnastics, lacrosse, softball, volleyball, cross country, and indoor and outdoor track. They also participate in Division II swimming and diving, and tennis. URI holds membership in the Association of Intercollegiate Athletics for Women and the Eastern Association of Intercollegiate Athletics for Women. The expansion of women's athletic programs provides opportunity for a high level of competition for exceptional female athletes on both the regional and national level.

Intramural programs for men and women combine the values of competitive athletics and informal sports, and are in operation all year.

Those with sports interests may join the several clubs identified with particular sports.

**Honor Societies.** The University has chapters of a number of national honor societies, election to which is a recognition of accomplishment. The Society of the Sigma Xi is the scientific honor society, Phi Beta Kappa is a national liberal arts honor society, Phi Eta Sigma is a national honor society for freshmen, Phi Kappa Phi is the honor society for general scholarship, and Mortar Board recognizes scholarship and leadership. In more specialized areas are the following: Alpha Kappa Delta (sociology), Alpha Zeta (agriculture), Beta Alpha Psi (accounting), Beta Gamma Sigma (business), Kappa Delta Pi (education), Delta Pi Epsilon (business education), Eta Kappa Nu (electrical engineering), Lambda Tau (medical technology), Omicron Delta Epsilon (economics), Omicron Nu (home economics), Phi Alpha Theta (history), Phi Sigma (biological science), Phi Sigma Iota (foreign languages, literature, and linguistics), Pi Delta Phi (French), Pi Mu Epsilon (mathematics), Pi Sigma Alpha (political science), Pi Tau Sigma (mechanical engineering), Rho Chi (pharmacy), Sigma Delta Pi (Spanish), Sigma Pi Sigma (physics), Sigma Theta Tau (nursing), and Tau Beta Pi (engineering).

**Other Organizations.** In addition to intercollegiate athletic teams, a number of organizations represent the University in competition, exhibitions, and public performances. The University Band, Chorus, and Orchestra are under music department direction, and students may receive credit for partici-

pation in any one of these. The University Theatre, under theatre department direction, presents several plays each year. The URI Debate Council is directed by members of the speech department and participates in intercollegiate debates. The Cheerleaders are active at varsity football and basketball games and rallies.

On campus there are about 30 professional organizations related to the academic areas and there are a number of groups serving social, recreational, cultural, and political interests.

Students publish a newspaper four times a week, a bi-weekly gazette, a yearbook, and a literary publication, and operate WRIU, a local AM and a statewide FM radio station.

## Student Services

**Career Services.** The Office of Career Services assists students to understand themselves, to understand the relationship between their education and career choices, to discover and develop alternatives and finally, to make the transition from the academic environment to the working world. It provides individual counseling, developmental career groups and workshops. A Career Resource Center has information on specific careers, job-search strategy, job openings, employer literature and graduate schools. The office coordinates the on-campus recruiting program and makes other employer listings available to all students as well as alumni.

**Counseling Services.** The Office of Counseling and Student Development helps students relate their personal paths of development to the intellectual and interpersonal experiences they encounter in the University setting. The staff of this office works to keep education at a personal, individual level by offering assistance to students in choosing a field of study; developing effective study habits; coping with crises; building satisfying relationships with faculty, staff, and other students; making the transition to the University environment; solving emotional problems, or planning for graduate school or a career.

The staff is made up of counselors, psychologists, psychiatrists, and educational specialists who have a wide variety of experience working with students, both individually and in groups. In addition to direct counseling services, the staff offers a variety of programs designed to develop essential life skills, to examine crucial life themes, or to make successful life transitions.

University chaplains and religious advisers of various faiths are also available to all students. Religious organizations meet for worship and study, and sponsor other activities throughout the academic year.

**Memorial Union.** A student board of directors working with the Director of the Memorial Union determines policy for the Union and plans a full program of social, cultural, intellectual and recreational activities. The Union building is a memorial to the men of the University who died in two world wars. It houses a wide variety of educational, social, cultural and recreational services and facilities. These include meeting and conference rooms, lounges, browsing room, study rooms, dark rooms, student video center, radio station, campus newspapers, games room, offices for student organizations, student technical services, craft center, cafeteria, snack bar, restaurant, pub, private dining rooms, ballroom and party room.

Among the services provided are a full service bank, travel agency, unisex hair salon, credit union and a center where copying facilities and typewriters are available.

**Health Services.** The University Health Services is open to all students who have paid the health fee. Outpatient services in the Potter Building include limited emergency treatment, special clinics in gynecology, birth control, urology, internal medicine, surgery, wart removal, allergy, nutrition, and mental health. There is also a laboratory as well as X-ray and pharmacy facilities. Allergy injections are given, provided the vaccines are supplied.

The Health Education Department of Health Services in Roosevelt Hall is concerned with teaching students to take care of themselves and to become informed consumers of health-care services. It is open Monday through Friday, 8 a.m. to 4 p.m. Outpatient services during the academic year are available seven days a week, 24 hours a day. Physicians are available Monday through Friday from 8 a.m. to 8 p.m., and for a weekend clinic. Physicians are on call at other times. Nurses are on duty at all times. Specialists are available only at limited times.

Hospital care is available in the local community. All medical expenses incurred outside the University's Health Services are the responsibility of the student. Students who choose their own private physician must assume responsibility for expenses incurred.

## Confidentiality of Student Records

Procedures for the release and disclosure of student records maintained by the University are in large measure governed by state and federal laws. Where the law is silent, the University is guided by the principle that the privacy of an individual is of great importance and that as much information in a student's file as possible should be disclosed to the student upon request. A current or former student has the right to inspect and review official records, files and data directly related to that student. This right does not extend to applicants, those denied admission to the University or those who were admitted but did not enroll. Some records are not available to students.

A student may challenge the factual and objective elements of the content of student records, but not the qualitative and subjective elements of grading. Third parties do not have access to personally identifiable records or information pertaining to a student without the written consent of the student who specifies that the records be released. Parents are considered third parties.

Detailed guidelines for the release and disclosure of information from student records are available from the Office of Student Life. These guidelines comply with the legal requirements of the Family Educational Rights and Privacy Act of 1974.

# University College

Diane W. Strommer, *Dean*

All entering students are enrolled in University College except registered nurses and students in special two-year programs. University College offers all other incoming students the opportunity to explore the variety of courses and programs available at the University before they commit themselves to one program of concentration in a degree-granting college. Students who have a clear educational or professional objective when they enter the University are encouraged to transfer to a degree-granting college as directly and rapidly as possible, usually by the end of their first year.

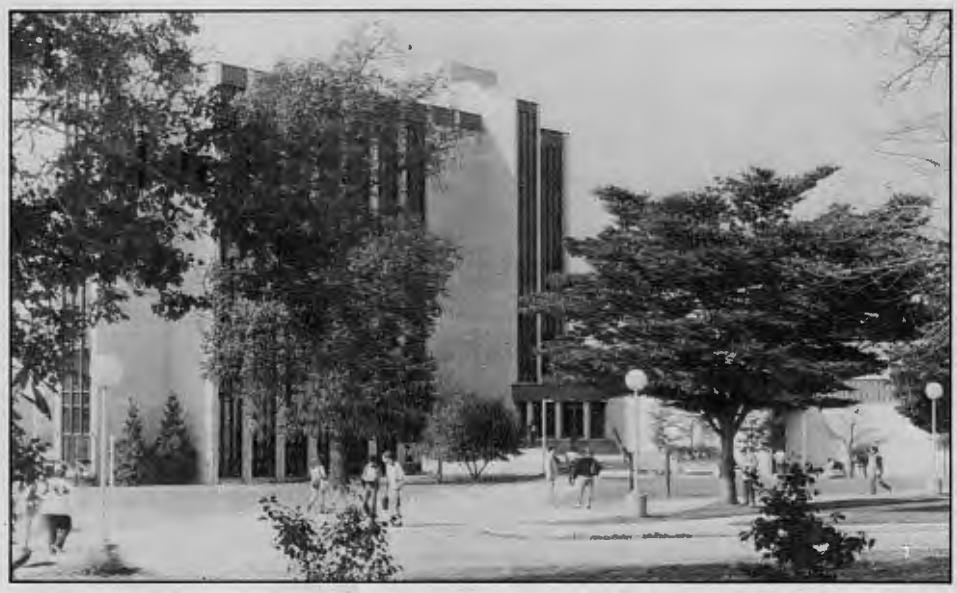
University College grants no degrees. Through its strong program of academic advising, its purpose is to assist new students in making a smooth transition to the University and to provide special assistance, programs, and events for freshmen and sophomores. Advisers, who have regular office hours at the college, are faculty members who represent each of the curriculms in the degree-granting colleges. Each student is assigned an academic adviser who is a specialist in the area which the student plans to pursue or who has a particular interest in working with students who have not yet declared a major. Advisers help students to select and schedule the right courses, become familiar with University procedures, and obtain whatever assistance may be needed.

If more students seek access to a program than can be accommodated due to limited facilities or faculty, those students who have shown the highest promise for academic success in the program will be admitted first. Where such limitations exist, the student must apply for acceptance in the program under conditions established by the specific department or college. This applies specifically to programs which have been declared "oversubscribed" by the Vice President for Academic Affairs. Students who cannot be admitted to the program of their first choice may request entry into another program for which they have satisfied entrance requirements, or spend one or two additional semesters in University College preparing to qualify for another program.

**Special Program for Talent Development.** This program, administered by the University College, has as its primary concern young people who could not go to the University without the program's assistance. For further information, see page 19.

**Study Abroad Office.** The Study Abroad Office is under the auspices of University College. Its function is to assist students in planning courses of study in foreign countries, as well as travel and living arrangements. The Study Abroad adviser assists students in handling the procedures for obtaining prior approval for courses to be taken abroad and for retaining matriculated status at the University of Rhode Island during the period of absence from campus.

# College of Arts and Sciences



Barry A. Marks, *Dean*
Margaret D. Robb, *Associate Dean*
Gerry S. Tyler, *Associate Dean*
Donald J. Farish, *Assistant Dean*

The objective of the College of Arts and Sciences is to enable students to understand our intellectual heritage, the physical and biological world in which we live, and our social, economic, and political development. Beyond this, the college provides several programs of professional training and a strong foundation for graduate study. In all its functions the college is dedicated to fostering a spirit of inquiry and independent thought. Emphasis is placed upon intellectual growth and the deep satisfaction derived from knowledge for its own sake.

The college has programs of study leading to the following degrees: Bachelor of Arts, Bachelor of Science, Bachelor of Fine Arts, and Bachelor of Music. The Department of Dental Hygiene provides programs leading to both the Bachelor of Science and the Associate in Science degrees.

For information about preprofessional preparation, see pages 12-14.

## Curriculum Requirements

**Basic Liberal Studies.** The University's General Education Requirements are the foundation of a program called Basic Liberal Studies, required of all students in the College of Arts and Sciences. This series of courses is intended to insure that students have educational experiences which will help them to become informed and responsible participants in society and will contribute to the full development of their individual capabilities. It embodies the philosophy and fundamental knowledge which characterizes an arts and sciences education.

Courses are selected from the list approved by the College of Arts and Sciences (see below). Students are limited to one course per discipline (as identified by course code) within each division, except that they may take both parts of a designated two-course sequence.

Students in Bachelor of Science (B.S.), Bachelor of Fine Arts (B.F.A.), and Bachelor of Music (B.M.) programs earn six credits each in Letters, Natural Sciences, Social Sciences, and Fine Arts and Literature (three of which must be in Fine Arts and three in Literature), three credits in Mathematics, and six in English Communication, including at least three credits from a course devoted to written communication skills. Students in these programs must satisfy the University's foreign language/culture requirement as specified.

Students in Bachelor of Arts (B.A.) programs earn nine credits each in Letters, Natural Sciences, Social Sciences, and Fine Arts and Literature (at least three of which must be in Fine Arts and three of which must be in Literature), three credits in Mathematics and six credits in English Communication, including at least three credits from a course devoted to written communication skills.

Students in B.A. programs must satisfy the University's foreign language/culture requirement in one of the following ways: (1) course work through the intermediate level (104 for modern languages; 302 for classical languages), or (2) demonstration of competence through examination, or (3) study abroad in an approved academic program for one semester.

All students are prohibited from applying courses from their concentration department to the Basic Liberal Studies requirements in Fine Arts and Literature, Letters, Natural Sciences, and Social Sciences except that students presenting a double concentration may apply courses from one concentration department toward these requirements.

*Fine Arts and Literature (A)*

ART 101, 103, 120, 203, 207, 215, 231, 233, 251, 252, 280, 284, 359, 374; CLS 250; ENG 241, 242, 243, 251, 252, 261, 262, 263, 264, 265; FRN 325, 326, 391, 392, 393; GER 325, 326, 391, 392; ITL 325, 326, 391, 392, 393, 395; MUS 101, 111; RUS 325, 326, 391, 392; SPA 303, 306, 391, 392, 393; SPE 231.

*Letters (L)*

HIS 103, 105, 111, 112, 113, 114, 118, 122, 132, 141, 142, 143, 145, 150, 180, 315, 321, 322, 323, 324, 325, 327, 333, 341, 342, 353, 354, 381, 382, 383, 384; PHL 103, 104, 111, 117, 125, 126, 127, 131, 312, 318, 319, 321,

322, 323, 324, 328, 331, 346; PSC 341, 342; SPE 205, 210.

*Natural Sciences (N)*

APG 201; AST 108; AVS 101; BIO 101, 102A; BOT 111; CHM 101, 102, 103, 105, 107, 112, 114, 124, 191, 192; ESC 100, 105; FSN 207; GEL 100, 103, 104, 105; PHY 111, 112, 120, 130, 140, 213, 214; ZOO 111.

*Social Sciences (S)*

APG 200, 202, 203, 319; CSC 220; ECN 123, 125, 126, 300, 361; EDC 102; FSN 150; GMA 100, 131; PSC 113, 116, 201, 221, 288; PSY 103, 113, 232, 235, 254; SOC 202, 208, 304, 316, 330, 336, 338, 340, 342.

*Mathematics (M)*

CSC 201; EST 220; MGS 101, 102; MTH 107, 108, 109, 141, 142.

*English Communication*

*Writing* (Cw) — BED 227; CMS 101; ENG 103; WRT 101, 102, 112, 122, 123, 300, and 333. *General* (C) — CMS 101; PHL 101; SPE 101 and 201.

*Culture Clusters*

See list of approved foreign culture clusters in the general education requirements on page 10. Students in the College of Arts and Sciences must select courses within a culture cluster from two different departments.

**Honors Programs.** Comprehensive honors programs are available for especially qualified junior and senior students. Eligibility depends on the quality of academic achievement during the previous two years. Qualified students may assist in research projects related to their major interests, enjoy graduate student privileges at the University libraries, and take graduate courses during their senior year. Honors programs are available in anthropology, biology, botany, chemistry, computer science, economics, English, geography, geology, history, journalism, languages, mathematics, microbiology, music, philosophy, physics, political science, psychology, sociology, speech, and zoology.

**Concentration.** Any student who has met the requirements for two separate concentrations within any single bachelor's curriculum has earned a double concentration and may have both fields listed on the transcript.

The students must maintain a 2.0 quality point average (QPA) in their concentration to meet graduation requirements.

One-half of the total number of credits needed in a given concentation must be earned at the University of Rhode Island.

**Curricular Modifications.** In exceptional cases, and subject to the approval of their department and of the dean, students may modify any curricular requirement except course level, minimum grade point average, total credits and the Basic Liberal Studies requirements. These may be modified only upon approval of a petition by the Scholastic Standing and Petitions Committee of the College. Petition forms are available in the Dean's Office.

**Area of Interest — Optional.** Students may elect to declare an area of interest which will appear on their transcripts as a category separate from their concentration. Credits may be drawn from any combination of concentration, Basic Liberal Studies courses, electives, and course-level categories. An area of interest may be defined as (1) the completion of 18 or more credits offered within a department and approved by the department chairperson, or (2) the completion of 18 or more credits of related studies offered by more than one department and approved by a member of the faculty competent in the area of interest and the dean of the college.

*Examples* of such interdisciplinary areas of interest are Child Psychology, Music Merchandising, Public Relations, Renaissance Civilization, and Black Studies. It is the responsibility of the student to declare his or her area of interest no later than the beginning of the semester when graduation is expected.

**Electives.** The student must elect courses sufficient in credits to complete the 120 required for graduation. Courses may be taken in any college of the University.

**Course Load.** No student may take more than 19 credits per semester without permission from the adviser and the dean.

**Graduation.** It is the responsibility of the student to submit a graduation worksheet, signed by his or her adviser, to the Dean's Office. Deadlines for submission are as follows:

May Graduation — November 1
August Graduation — April 1
December Graduation — August 1

## Bachelor of Arts

The Bachelor of Arts curriculums provide a general cultural background and an opportunity to concentrate in any one of 28 fields of study.

**Curriculum Requirements.** Each candidate for a Bachelor of Arts degree must meet certain minimum curriculum requirements having to do with quantity and quality. These requirements include the completion of at least 120 passed credits averaging, at graduation, C or better. On the University's grading system, this represents a cumulative quality-point average of 2.0 or higher. Of the 120 passed credits, at least 42 must be in upper-level courses, numbered 300 or above.

In addition to meeting the requirements of the Basic Liberal Studies Program, each candidate must complete a concentration and a number of elective courses. The concentration totals 27 to 30 credits.

**B.A. Concentration.** The concentration is the discipline or subject area in which the degree is granted. It may include not only required courses within the concentration department but also courses in related subjects offered by the student or required by the department. The student should declare this concentration before the end of the fourth semester.

The concentration comprises no fewer than 27 nor more than 30 credits. These, however, are exclusive of any credits which are outside the concentration department but may be required by that department as prerequisites. Including such prerequisites,

the concentration may not exceed 36 credits.

The student may earn up to 45 credits in course work offered by the concentration department, counting as electives those credits earned in excess of the concentration requirements. Any credits in excess of 45 earned in the concentration department increase correspondingly the minimum number of credits required for graduation.

*Concentration areas include:* anthropology, art (history and studio), biology, chemistry, classical studies, economics, education, English, French, geography and marine affairs, geology, German, history, Italian, journalism, Latin American studies, linguistics, mathematics, music, philosophy, physics, political science, psychology, Russian, sociology, Spanish, speech, theatre, urban affairs (urban social processes, policy formation, and spatial development).

**Modified Concentration.** In consultation with the adviser, and with the approval of the dean, a student may be permitted to modify the normal requirements of the department in which the student is concentrating. With such approval, the program, consisting of no fewer than 27 nor more than 30 credits, will constitute the student's concentration.

## Bachelor of Science

The Bachelor of Science curriculums are professionally oriented and, in general, meet the accreditation standards of national professional associations.

**Curriculum Requirements.** All candidates for the Bachelor of Science degree must fulfill the requirements of the Basic Liberal Studies Program and complete a major of 30-45[1] credits within a department. In addition, a department may require for its concentration certain courses in other departments, with the stipulation that this will not preclude their application to the Basic Liberal Studies Program requirements. No more than 130 credits can be required in a program.

Each concentration within the B.S. curriculum has certain more specific requirements, as listed on the following pages.

*Concentration areas include:* botany, chemistry, computer science, dental hygiene, geology, mathematics, medical technology, microbiology, physics, zoology.

## Bachelor of Fine Arts

The curriculums provide the opportunity to discover and develop creative capacities in the fine arts. The emphasis is on richness of program and quality of experience rather than the development of isolated skills. Applicants registering for work toward the Bachelor of Fine Arts degree must receive permission of their concentration department. Students concentrating in theatre specializing in scene design must submit portfolios. Theatre students who wish to specialize in acting must arrange for an audition with the Department of Theatre. Others must arrange for an interview with a departmental representative. Further details and appointments may be obtained through the University Admissions Office.

**Curriculum Requirements.** All candidates for the Bachelor of Fine Arts degree are required to meet the requirements of the Basic Liberal Studies Program.

*Concentration areas include:* art, theatre.

## Bachelor of Music

The Bachelor of Music degree is designed to prepare qualified students for careers in the field of music. Students may select one of eight areas of concentration dependent upon their aims and abilities.

*Concentration areas include:* classical guitar, voice, piano or organ, orchestral instrument, music history and literature, theory and composition, jazz studies, music education.

All areas provide for a good background in academic subjects and each curriculum contains basic courses for the development of sound musicianship. An audition conducted by members of the music department staff is required for permission to register for work toward the Bachelor of Music degree.

Concentration in the music education curriculum includes courses in educational psychology, methods, and a teaching internship which leads to state certification for teachers.

The total number of credits for graduation is 125 (126 for music education majors).

**Curriculum Requirements.** All candidates for the Bachelor of Music degree are required to meet the requirements of the Basic Liberal Studies Program.

Students are encouraged to attend department-sponsored events each semester.

## Associate in Science

The Department of Dental Hygiene offers a two-year program leading to the Associate in Science degree. Students in this curriculum are not required to meet the Basic Liberal Studies Program requirements but must complete 71 credit hours in a prescribed program outlined in the department offerings.

## Anthropology

The Department of Sociology and Anthropology offers the degree of Bachelor of Arts (B.A.) in anthropology.

*Faculty:* Associate Professor Gelles, *chairperson*. Professor Poggie; Associate Professors Loy, Pollnac, and Turnbaugh; Assistant Professor Lynch.

Students desiring to concentrate in anthropology must complete a total of 30 credits in that subject. This total must include at least one course (3 crs.) from each of the sub-disciplines of anthropology as follows: *Cultural Anthropology* includes APG 203, 309, 321, 322, 323, 324, 326, 405, 407, and 411; *Culture Areas* includes APG 305, 311, 313, 315, and 319; *Physical Anthropol-*

[1]The student concentrating in chemistry, for ACS accreditation purposes, will be allowed 48 credits.

ogy includes APG 201, 301, and 412; *Archaeology* includes APG 202, 303, and 317; *Anthropological Linguistics* includes APG 200 and 409.

In addition, each student majoring in anthropology must complete APG 401 (3) and 402 (3). The remaining 9 credits may be selected from course offerings in anthropology.

It is recommended that the first course in each sub-discipline be at the 200 level. These 200-level courses are prerequisites for upper division courses in the sub-disciplines, although prerequisites may be waived by the instructor.

It is strongly recommended, but not required, that anthropology majors take at least one course in statistics, and a foreign language up to the intermediate level.

## Art

The Department of Art offers a Bachelor of Arts (B.A.) degree with a concentration in either art history or art studio, and a Bachelor of Fine Arts (B.F.A.) degree in studio.

*Faculty:* Professor Fraenkel, *chairperson.* Professors Ketner, Klenk, Leete, Parker, and Rohm; Associate Professors Calabro, Kampen, Richman, and Keller; Assistant Professors Cordes, Holmes, Onorato, and Roworth.

### BACHELOR OF ARTS

**Art History.** It is recommended that students intending to concentrate in art history plan to complete a minimum of 6 credits in the history of art by the end of the sophomore year. For graduation students must complete 30 credits (maximum 45 credits) in art history, including ART 251 and 252 (6), 354 (3), 356 (3), 359 (3), 361 or 362 (3) and 365 (3). An additional 3 credits are taken from any 200- or 300-level course in art history. An additional 6 credits must be selected from ART 461, 462, 469, 470, 480, 484. Studio courses in art are not to be considered part of the art history concentration and may be used as free electives.

It is recommended that students concentrating in art history achieve intermediate level proficiency in a least one foreign language. Students anticipating graduate study in art history may need proficiency in a second foreign language. Students are also encouraged to enroll in courses in art studio, history, literature, music, and philosophy.

A total of 120 credits is required for graduation. Students must fulfill the requirements of the Basic Liberal Studies Program and take 30-45 credits in art history. Students may use courses in art studio as electives. Of the 120 credits required for graduation, 42 credits must be numbered 300 or above.

**Art Studio.** It is recommended that students intending to concentrate in art studio plan to complete a minimum of 9 credits in studio by the end of the sophomore year. For graduation, a minimum of 30 credits in art (maximum 45 credits) must be completed, including: studio courses ART 101, 103, 207, 403, and 404; art history courses ART 251, 252, and one art history elective.

An additional 6 credits must be selected from ART 213, 314, 215, 316, 221, 322, 231, 332, 233, 334, 243, 344. These credits may be taken in the same subject or in two different subjects. Art history credits taken in addition to the 9 required are not to be considered part of the art studio concentration and may be taken as free electives.

It is recommended that art majors elect at least 3 credits in the allied fields of music or theatre.

A total of 120 credits is required for graduation. Students must fulfill the requirements of the Basic Liberal Studies Program and take 21-36 credits in art studio and 9 credits in art history. Students may use additional courses in art history as electives. Of the 120 credits required for graduation, 42 credits must be numbered 300 or above.

### BACHELOR OF FINE ARTS

It is recommended that students intending to enter the B.F.A. program in art plan to complete ART 120 in the freshman year and to have completed an additional 3 credits in art history and a minimum of 24 credits in studio by the end of the sophomore year.

Students in the B.F.A. program must complete a minimum of 72 credits in art. Studio courses required of all majors include: ART 101 (3), 103 (3), 207 (3), 208 (3), 403 (3), 404 (3), 405 (3), and 406 (3).

An additional 15 credits must be selected from 200 level studio courses, and an additional 15 credits must be selected from 300 level studio courses.

ART 120 is required of all students and an additional 9 credits must be selected in art history, 3 credits of which must be numbered 300 or above.

An additional 6 credits of art electives must be selected at the 300 level or above in either studio or art history.

A minimum of 126 credits is required for graduation, including the following: major requirements in studio (54), art history (12), studio and/or art history electives (6). Students must meet the requirements of the Basic Liberal Studies Program.

## Biological Sciences

Programs in biological sciences are administered by the Departments of Botany, Microbiology, and Zoology. A student may earn either the Bachelor of Arts (B.A.) degree in biology or the Bachelor of Science (B.S.) degree in botany, microbiology, or zoology. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees, also offered by these departments, are described in the *Graduate School Bulletin.*

*Botany Faculty:* Professor Goos, *chairperson.* Professors Albert, Beckman, Hauke, Palmatier, Smayda and Swift; Associate Professors Hargraves, Harlin and Mottinger; Assistant Professors Killingbeck, Koske, Sheath and Swanson; Adjunct Professors Dougall, Halvorson and Simmons; Emeritus Professors Caroselli and Lepper.

*Microbiology Faculty:* Professor N. P. Wood, *chairperson.* Professors Cabelli, P. S. Cohen, H. W. Fisher, Sieburth and Traxler; Associate Professor Hufnagel and Laux; Assistant Professor Sperry; Adjunct Professors Chapple and Ennis; Adjunct Associate Professor Prager; Adjunct Assistant Professor Dufour; Emeritus Professor Carpenter.

*Zoology Faculty:* Professor Wilde, *chairperson.* Professors Chipman (on leave 1981-83), Cobb, Costantino, Goertemiller, Hammen, Heppner, Hill,

K. E. Hyland, Saila, Shoop and Winn; Associate Professors Bibb, Bullock, Hairston, Kass, Krueger and Mottinger; Assistant Professors Foresman and Goldsmith; Adjunct Professors Bliss, Farish, Gibbs, Lions, Parwar-Jahan and Tilly; Adjunct Associate Professor Miller; Emeritus Professors DeWolf, Harrison, Zinn; Emeritus Associate Professor Mathewson.

## BACHELOR OF ARTS

Students selecting a concentration in biology must complete a minimum of 28 credits in biological sciences including the following basic courses: BIO 101 and 102 or BOT 111 and ZOO 111 (6-8), MIC 211 (4), BOT electives (6), ZOO electives (6).

The remaining 4-6 credits may be selected from courses in botany, microbiology, or zoology. Students in this concentration must elect a year of chemistry. Those wishing to prepare for a career as a professional botanist, microbiologist, or zoologist should enroll in the bachelor of science curriculum in biology described below.

Students must declare their major when leaving University College.

## BACHELOR OF SCIENCE

This curriculum provides specialization in the fundamental principles of botany, microbiology, or zoology, and is concerned with the application of biological science to problems of modern life. It also provides preparation for graduate work in biological fields including aquatic, environmental and marine biology, cellular and developmental biology, biological oceanography, genetics, immunology, and limnology, and for admission to professional schools of medicine, dentistry, and veterinary medicine.

Students who know their professional goals are encouraged to declare their major as soon as possible in order to take advantage of skilled advising in botany, microbiology, or zoology. Students *must* declare their major when leaving University College.

Each concentration requires a total of 130 credits.

*Freshman Year*
*First semester: 17 credits*

BOT 111 or ZOO 111 (4), CHM 101, 102 or 103, 105 (4), MTH 109 or 141 (3), modern language or elective (3), and general education requirement or free elective (3).

*Freshman Year*
*Second semester: 17 credits*

BOT 111 or ZOO 111 (4), CHM 112, 114 (4), MTH 141 or 142[2] (3), modern language or elective (3), and general education requirement or free elective (3).

*Sophomore Year*
*First semester: 16 credits*

MIC 211 (4)[3], CHM 227 (3), and 9 credits of general education requirements or free electives[4] for a total of 17 credits.

*Sophomore Year*
*Second semester: 17-18 credits*

Curriculum requirements (3-4), general education requirements or free electives (9), and the remaining chemistry requirements CHM 226[5], 228 (5).

**Botany.** A minimum of 30 credits in botany is required and must include BOT 111, 221, 245, 262, 311, 323, 352, and one of the following: BOT 332, 355, or 432. In addition, the student must take MIC 211; CHM 101, 102, or 103, 105, 112, 114, 226[5], 227, and 228; PHY 213, 285, 214, 286 or 111 and 112; ZOO 111; WRT 101; SPE 101 or 102; MTH 141 and 142; a modern language is recommended.

**Microbiology.** A minimum of 30 credits in microbiology is required, including MIC 411 and 495 or 496. The student concentrating in microbiology may include any course in microbiology; ASP 534, 536, and 538; BOT 354, 355, 432, 534, 542; PCG 536; ZOO 323, 331, 441, and 512. A student who plans to attend graduate school is advised to take MTH 141 and 142, and BCP 435. In addition the student must take BOT 111 and 352; ZOO 111; CHM 101, 102, or 103, 105, 112, 114, 226[5], 227, 228, and 212; BCP 311; PHY 213, 285, 214, and 286 or 111 and 112; MTH 109 or 141, and 141 or 142; and one semester of a modern language at the intermediate level. Courses offered at the Alton Jones Cell Science Center, Lake Placid, New York, may be used for major credit.

Prior permission of the department is required.

**Zoology.** A minimum of 30 credits in zoology is required and must include ZOO 221, 254, 262, 316, 345 or 441, and 395; ASC or BOT 352. In addition, the student must take BOT 111; CHM 101, 102 or 103, 105; CHM 112, 114, 226[5], 227, 228; MTH 141, 142; PHY 111, 112 or PHY 213, 285, 214, 286; and a modern language through the intermediate level. ZOO 111 is not required for a concentration in zoology but may be applied toward the 30 hours required.

Students are strongly urged to consult the zoology advisers and obtain from them detailed programs of the various sub-disciplinary paths through the department.

## Chemistry

The Department of Chemistry offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in chemistry are described in the *Graduate School Bulletin*.

*Faculty:* Professor Cruickshank, *chairperson*. Professors Abell, C. W. Brown, P. R. Brown, Fasching, Gonzalez, Goodman, S. MacKenzie, W. H. Nelson, Petersen, Rosie and Vittimberga; Associate Professors Cheer, Freeman, Kirschenbaum and Rosen; Assistant Professor Forcé.

### BACHELOR OF ARTS

Students selecting this field of concentration must complete 28-30 credits in chemistry by taking either 12 credits as CHM 101 and 102, 112 and 114, 212; or 10 credits as CHM 191 and 192; and 18 credits as CHM 227 and 228, and 226, 431, and 432, 335 and 336. CHM 229, 230, which is offered in summer only, may be substituted for CHM 226. CHM 291, 292 may be substituted for the CHM 226, 227, 228 sequence.

MTH 141 and 142, one year of physics (PHY 111 and 112 or PHY 213, 214, 285, and 286) are required and one semester of English composition (WRT 101 or 102) is strongly recommended.

### BACHELOR OF SCIENCE

Designed to prepare the student for a career in chemistry, this curriculum provides a thorough training in both theories and practices in the fields of analytical, physical, organic and inorganic chemistry. Those who complete this curriculum are prepared to continue with graduate study leading to an advanced degree, to teach or to enter specialized fields in development, control, technical sales, and research either in the chemical industry or in industries involving chemical processes.

The curriculum has been approved by the American Chemical Society Committee on the Professional Training of Chemists. Graduates receive a certification card issued by the society and are eligible for senior membership after two years of experience in the field of chemistry. It is strongly recommended that WRT 101 or 102 be taken in the freshman year. CHM 412, 414 should be taken in the junior year by students planning research or advanced course work in analytical chemistry. CHM 425, 427 should be taken in the junior year by students planning research or advanced course work in organic chemistry.

The bachelor of science program requires 130 credits.

*Freshman Year*
*First semester: 17 credits*

CHM 191 (5), MTH 141 (3), language[6] or free elective (3), general education electives (6).

*Freshman Year*
*Second semester: 17 credits*

CHM 192 (5), MTH 142 (3), language[6] or free elective (3), general education electives (6).

*Sophomore Year*
*First semester: 17 credits*

CHM 291 (4), MTH 243 (3), PHY 213 (3) and 285 (1), language[6] or general education elective (3), general education elective (3).

*Sophomore Year*
*Second semester: 17 credits*

CHM 292 (4), MTH 244 (3), PHY 214 (3) and 286 (1), language[6] or general education elective (3), general education elective (3).

*Junior Year*
*First semester: 14 credits*

CHM 431 (3), 335 (2), physics elective (3), general education elective (3), free elective (3).

*Junior Year*
*Second semester: 17 credits*

CHM 432 (3), 336 (2), general education electives (6), free electives (6).

*Senior Year*
*First semester: 16 credits*

CHM 401 (3), 425 (2), 427 (3) curriculum[7] requirements (3-5), free electives (5-3).

*Senior Year*
*Second semester: 15 credits*

CHM 392 (1), 412 (3), 414 (2), curriculum[7] requirement (3-0), free electives (6-9).

## Classical Studies

The Department of Languages offers the Bachelor of Arts (B.A.) degree with a concentration in classical studies.

*Faculty:* Associate Professor Dornberg, *chairperson* (Department of Languages); Associate Professor Cashdollar, *section head*.

Students selecting classical studies as a concentration complete a minimum of 30 credits; (a) 18 credits from either LAT 301, 302, 497, 498, or GRK 301, 302, 497, 498; (b) 6 credits from the other language at any level; (c) 6 additional credits from any courses offered by the Classics Section. Either LAT 101, 102 or GRK 101, 102 sequence may count toward the concentration; the other 100-level sequence, not counting toward the concentration, will serve as a prerequisite for advanced courses.

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[2]MTH 142 is required of botany and zoology majors.

[3]Not required of zoology majors.

[4]Zoology majors are strongly advised to begin taking required zoology courses at this time.

[5]CHM 229, 230, which is offered in summer only, may be substituted for CHM 226.

[6]Students planning to attend graduate school should take Russian or German through the intermediate level.

[7]CHM 353, 354 or, with permission of department, any 500-level chemistry course.

## Comparative Literature Studies

The Department of English and the Department of Languages offer jointly the Bachelor of Arts (B.A.) degree in comparative literature. The Master of Arts (M.A.) degree is described in the *Graduate School Bulletin*.

*Coordinator:* Associate Professor Kuhn (Languages)

The choice of courses in a student's program of concentration and in the area of special interest must have both sufficient range (genre, period, and at least two literatures) and a specific focus. It must be approved by an adviser and the Comparative Literature Advisory Committee consisting of members from the Departments of English and Languages.

Students must complete a minimum of 30 credits in one of the three concentration options:

**English and one foreign literature in the original language.** 9 credits in English and/or American literature, 300 level or above; 9 credits in one foreign literature; 3 credits in literary theory or criticism (CLS 350). The remaining credits to be taken from the comparative literature core courses or the literature courses in the Departments of English or Languages.

**Two foreign literatures in the original language.** 9 credits in each of two foreign literatures; 3 credits in literary theory or criticism (CLS 350). The remaining courses to be taken from the comparative literature core courses or the literature courses in the Departments of English or Languages.

**World literature in English translation.** 3 credits in the nature of language from APG 200, 409; LIN 201, 202; or PHL 440; 3 credits in literary theory or criticism (CLS 350). The remaining credits to be taken from the comparative literature core courses and the literature courses in the Department of English, and the literature in English translation courses offered by the Departments of English and Languages. In addition, a student choosing this option must have proficiency in a foreign language through the intermediate level.

## Computer Science and Experimental Statistics

The Department of Computer Science and Experimental Statistics offers the Bachelor of Science (B.S.) degree in computer science. The Master of Science (M.S.) degree programs in computer science or experimental statistics and the Doctor of Philosophy (Ph.D.) in Applied Mathematical Sciences with specialization in computer science or statistics are described in the *Graduate School Bulletin*.

*Faculty:* Professor Hemmerle, *chairperson*. Professors Carney, Merenda and L. T. Smith; Associate Professors Bass, Carrano, Hanumara, Heltshe, Lawing and Weiderman; Assistant Professors Lamagna and Tetreault.

The curriculum is designed to provide a broad introduction to computer science fundamentals. Emphasis is on computer software and applications. The required mathematics preparation provides a basis for advanced work. Students will be well prepared for graduate study in computer science or for careers in computer-related areas.

Demand for computer science has far exceeded the department's resources. Therefore, the number of students concentrating in computer science enrolled in the College of Arts and Sciences will be limited to 35 per year. University College students and students in other curriculums will be considered for admission to the College of Arts and Sciences as computer science concentrators each January. Selection will be based primarily upon grade point average.

A registration priority is in effect for all computer science courses. Preference is given to computer science majors, followed by students whose curriculum requires computer science, followed by all others. Students who have preregistered for computer science courses will be given preference, within the above constraints, regardless of their curriculum. Therefore, preregistration is strongly recommended.

Students in this curriculum must complete a minimum of 36 credits in computer science and experimental statistics as follows:

CSC 201 (3), 202 (3), 220 (3), 240 (3), 283 (1), 285 (1), 302 (3), 311 (3), 350 (3), 382 (1), 411 (3), 412 (3), 413 (3), and EST 409 (3).

In addition the following are required: MTH 141 (3), 142 (3), 243 (3), 215 (3); ELE 405 (3); one WRT course (3); one SPE course (3); and 12 credits selected from Groups I and II as defined below with a minimum of 3 credits chosen from each group.

**Group I:** PHL 451, MTH 244, any MTH course at the 300 level or above except MTH 381.

**Group II:** ELE 205; EST 412, 413; IDE 432, 433, 435; MGS 445, 483, 486.

A total of 130 credits is required for graduation.

Following is a possible course sequence for four years. Note that Group I and II courses may be taken at times other than those listed below.

*First Year*
*First semester: 15 credits*

MTH 141 (3), WRT 101 (3), general education or electives (9).

*First Year*
*Second semester: 15 credits*

CSC 201 (3), MTH 142 (3), SPE 101 (3), general education or electives (6).

*Second Year*
*First semester: 15 credits*

CSC 202 (3), MTH 243 (3), general education or electives (9).

*Second Year*
*Second semester: 15 credits*

CSC 240 (3), 283 (1), 285 (1), MTH 215 (3), general education or electives (7).

*Third Year*
*First semester: 18 credits*

CSC 220 (3), 302 (3), 311 (3), EST 409 (3), Group I or II (3), general education or electives (3).

*Third Year*
*Second Semester: 17 credits*

CSC 350 (3), 382 (1), 411 (3), Group I or II (3), general education or electives (7).

*Fourth Year*
*First semester: 17 credits*

CSC 413 (3), Group I or II (6), general education or electives (8).

*Fourth Year*
*Second semester: 18 credits*

CSC 412 (3), ELE 405 (3), general education or electives (12).

## Dental Hygiene

The Department of Dental Hygiene offers a four-year program leading to the Bachelor of Science (B.S.) degree and a two-year program leading to the Associate in Science (A.S.) degree. Both are accredited by the Commission on Dental Accreditation.

*Faculty:* Professor B. Wilson, *chairperson.* Assistant Professors B. Brown and S. Saunders; Adjunct Professors A. Carlotti, Jr. and J. Yacovone; Clinical Instructors S. Bauder, F. Bliss, J. Bush, J. Feldman, P. Frazier, A. J. Kershaw, B. Kilcline, G. Miller, J. Mullane, E. Nelson, D. Persechino, S. Ross, J. Schwab and J. Tompkins.

BACHELOR OF SCIENCE

This curriculum offers maximum flexibility in providing professionally oriented study and a foundation in general education. It is designed to prepare the student to assume responsible positions in education, such as in schools of dental hygiene, hospital programs, and school systems as well as private practice. Students who complete this curriculum are prepared to continue with graduate study.

Upon completion of the required 71 credits in dental hygiene, the student is awarded the Associate in Science degree. A total of 125 credits is required for the Bachelor of Science degree. At the completion of the first clinical year, students are placed in private dental offices for one month of field training experience.

The required professional courses are made up of the elements which contribute directly to the skill and understanding of dental hygiene and are required in the professional sequence.

A concentration of 30 credits in dental hygiene includes: DHY 101 (1), 125 (3), 135 (1), 141 (1), 126 (3), 128 (1), 136 (2), 227 (3), 231 (2), 237 (2), 238 (2), 244 (1), 246 (1), 250 (2), 252 (2), 254 (1), 260 (2).

In addition, candidates for the Bachelor of Science degree are required to take the following: CHM 101, 102 or 103, 105 (4), 124 (4), WRT 101 (3), 102 (3), ZOO 121 (4), 242 (3), 244 (1), HLT 172 (1), MIC 201 (4), SOC 202 (3), 304 (3), FSN 207 (3), PCL 221 (2), PSY 113 (3), 232 (3), SPE 101 (3), EDC 102 (3), 312 (3), 372 (3), MTH 107 (3), DHY 462 (3) is strongly recommended.

ASSOCIATE IN SCIENCE

This two-year curriculum of 71 credits prepares the student to perform ancillary clinical services which contribute to the maintenance of good oral health, educate both children and adults in oral hygiene, and assist the dentist to allow him more time for the treatment of patients.

The program is designed to allow transfer students from other colleges and curriculums to attain the Associate in Science degree. Two months of experience as a dental assistant is recommended for all students entering the dental hygiene program. At the completion of the first clinical year, the student is placed in a private dental office for one month of field training experience.

*Freshman Year*
*First semester: 17 credits*

CHM 101, 102 or 103, 105 (4), WRT 101 (3), ZOO 121 (4), DHY 101 (1), 125 (3), 135 (1), and 141 (1).

*Freshman Year*
*Second semester: 18 credits*

WRT 102 (3), CHM 124 (4), ZOO 242 (3), 244 (1), HLT 172 (1), DHY 126 (3), 128 (1), and 136 (2).

*Sophomore Year*
*First semester: 19 credits*

MIC 201 (4), SOC 202 (3), FSN 207 (3), PCL 221 (2), DHY 227 (3), 231 (2), and 237 (2).

*Sophomore Year*
*Second semester: 17 credits*

PSY 113 (3), SPE 101 (3), DHY 238 (2), 244 (1), 246 (1), 250 (2), 252 (2), 254 (1), and 260 (2).

## Economics

The Department of Economics offers a Bachelor of Arts (B.A.) degree and a Master of Arts (M.A.) in economics.

Students who want to design a special program combining economics with an applied area of interest or participate in the department honors program are encouraged to consult the chairperson of the department.

*Faculty:* Professors Hellman, Rayack and Schurman; Associate Professors Barnett, Brown, Ramsay, Starkey and Suzawa; Assistant Professors Burkett, Lardaro, Latos and Mead.

Students selecting this field of concentration must complete a minimum of 27 credits in economics, including ECN 123 or 125 (students may *not* take both) and 126 (6), 361 (3), and 327, 328 (6).

In addition, at least 12 credits must be completed from economics courses numbered 300 or above; or from MGT 321 (3), MGS 201, 202 (6), EST 408 (3), 409 (3) or 412 (3).

Students interested in a specialized applied area may, with the permission of their advisers, substitute such courses for some or all of the above 12 credits.

Students planning to do graduate work in economics are strongly advised to take ECN 375, 376, a semester of statistics, and participate in the department's honors program.

## Education

For a description of the program see the chapter on the College of Human Science and Services page 64.

## English

The Department of English offers a Bachelor of Arts (B.A.) degree. The Master of Arts (M.A.) and Doctor of Philosophy (Ph.D.) programs in English are described in the *Graduate School Bulletin.*

*Faculty:* Professor Pearlman, *chairperson.* Professors Goldman, Gullason, MacLaine, Mathews, Miller, Neuse, Petrie, Potter, Seigel, Sorlien, Towers and S. White; Associate Professors Arakelian, Barker, Campbell, Cane, Donnelly, M. Hills, Kunz, Malina, J. M. Marshall, McCabe, C. M. Murphy, Reaves, Schoonover, D. Stineback, Swan, R. H. Tutt and R. M. Tutt; Assis-

tant Professors S. F. Burke, R. Clark, Cuddy, Dvorak, Jacobs, Leo, Mensel, Schwegler, Shamoon, K. Stein, and S. F. Vaughn; Adjunct Professor Flannery.

Students selecting this field of concentration must complete a minimum of 30 credits in English, including ENG 251 and 252.

The other remaining credits will be determined by the student in continuing consultation with the departmental advisers.

## French

The Department of Languages offers the Bachelor of Arts (B.A.) degree with a concentration in French. The Master of Arts (M.A.) program in French is described in the *Graduate School Bulletin*.

*Faculty:* Associate Professor Dornberg, *chairperson* (Department of Languages); Associate Professor Morello, *section head*. Professors Porter, Rothschild and Waters; Associate Professors Chartier, Hyland, Kuhn, Rogers and Toloudis; Assistant Professor Driver.

Students selecting this field of concentration are required to complete at least 30 credits in French not including FRN 101, 102, 131, 391, 392, 393, or 394. They may elect either a language-civilization option requiring 6 credits in civilization and a minimum of 6 credits in literature or a language-literature option with a minimum of 9 credits in literature. Courses in literature may be selected from among FRN 325, 326, courses at the 400 level, and, with permission of the instructor, courses at the 500 level.

Additionally, students of proven competence in French language and literature, with permission of the adviser, the section head, the department chairperson and the dean of the college, may take courses in related fields such as history, linguistics, art, or philosophy toward their concentration.

Students in secondary education with an academic sequence in French (see page 64) cannot count FRN 101, 102, 131, 391, 392, 393, 394, or any course in linguistics other than 201 which may be taken if approved by the French Studies Section.

## Geography and Marine Affairs

The Department of Geography and Marine Affairs offers the Bachelor of Arts (B.A.) degree. The Master of Arts (M.A.) program in geography, Master of Marine Affairs (M.M.A.), and Master of Arts in Marine Affairs (M.A.M.A.) programs are described in the *Graduate School Bulletin*. Undergraduate students must complete one of the two concentration options described below.

*Faculty:* Associate Professor Juda, *chairperson*. Professors Alexander, Michel; Associate Professors Cameron and West; Assistant Professors Krausse and Nixon; Instructor Marti.

**Geography Option.** Students selecting this field of concentration must complete a minimum of 29 credits including 9 credits selected from: GMA 100 (3), 102 (3), 103 (3), or 131 (3); and all of the following: GMA 104 (3), 105 (3), 106 (1), 114 (1), 410 (3), 421 (3), 482 (3), and one upper-level GMA elective.

**Marine Environmental Policy Option.** Students selecting this field of concentration must complete a minimum of 30 credits including 9 credits selected from: GMA 100 (3), 102 (3), 103 (3), or 131 (3); and all of the following: GMA 104 (3), 210 (3), 410 (3), 421 (3), 461 (3), 482 (3), and OCG 401 (3).

## Geology

The Department of Geology offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The Master of Science (M.S.) degree in geology is described in the *Graduate School Bulletin*.

*Faculty:* Professor Cain, *chairperson*. Professors J. J. Fisher and Hermes; Associate Professors Boothroyd, Frohlich and Tynan; Lecturer Sage.

### BACHELOR OF ARTS

Students selecting this field of concentration must complete a minimum of 30 credits in geology, including GEL 103 (3), 106 (1) and 104 (3). GEL 105 (ESC 105), normally may not be included.

The B.A. curriculum provides more flexibility than the B.S. program in the choice of courses and offers the possibility of highly individualized programs in consultation with the faculty adviser. The B.A. curriculum can provide an appropriate background for geology-related fields dealing with resources, environmental studies, conservation management, and others. Students intending to pursue graduate studies in the geosciences should consider the B.S. curriculum in geology. The federal government identifies GEL 320, 321, 370, 410, 440, 450, and supporting sciences as a basic background for geologists.

Students interested in earth science teaching should contact the Department of Geology for details of a cooperative program with the Department of Education.

### BACHELOR OF SCIENCE

This curriculum is designed as a basic foundation in the earth sciences. It offers preparation for further work in areas such as sedimentology, coastal geology, petrology, geochemistry, geophysics, paleontology, paleoecology, mineral and energy resources, engineering geology, environmental geology, and oceanography.

An emphasis in marine geology is possible by taking, in addition to marine-oriented geology courses, approved geology-related courses offered by the Graduate School of Oceanography and the Department of Ocean Engineering as science electives. Information about this and other similar options can be obtained from the chairperson of the department.

Students concentrating in geology should note the requirement for field experience. An approved summer field camp for a minimum of 4 credits normally is undertaken following the junior year, and related costs are the responsibility of the student. Minimum background for field camp normally includes GEL 320, 321, 370 and 450. (Field camp is not required under the B.A. curriculum.)

A total of 126 credits is required for graduation. Following is the suggested sequence of courses for the first four semesters. Completion of these courses fulfills the Letters Division requirements and satisfies prerequisites

for upper-division geology courses. Late concentrators, transfer students and others wishing to modify this schedule should consult their geology faculty adviser.

*Freshman Year*
*First semester: 16-17 credits*

MTH 141 (3), GEL 103 (3), 106 (1), BOT 111 or BIO 101 (4-3), and general education requirements (6).

*Freshman Year*
*Second semester: 15-16 credits*

MTH 142 (3), GEL 104 (3), ZOO 111 or BIO 102 (4-3), and general education requirement (6).

*Sophomore Year*
*First semester: 16 credits*

CHM 101, 102 or 103, 105 (4), PHY 213, 285, or 111 (4), GEL 320 (4), and general education requirement or elective (4).

*Sophomore Year*
*Second semester: 16 credits*

CHM 112, 114 (4), PHY 214, 286 or 112 (4), GEL 321 (4), and GEL 370 (4).

*Junior and Senior Years*

In addition to the remainder of the general education requirements and free electives, the following 4-credit courses are required: GEL 410, 440, 450; approved summer camp (between junior and senior years).

Students must also take an approved course in statistical methods or computer science and 12 credits of science electives (including additional geology courses) which constitute an integrated group in earth science. These are selected in consultation with the faculty adviser.

## German

The Department of Languages offers the Bachelor of Arts (B.A.) degree with a concentration in German.

*Faculty:* Associate Professor Dornberg, *chairperson* (Department of Languages); Associate Professor Grandin, *section head*. Assistant Professor Benesch.

Students selecting this concentration complete at least 30 credits in German (27 credits for concentration in secondary education) not including GER 101, 102, 391, 392, or 393. At least 6 credits must be at the 400 level.

## History

The Department of History offers a Bachelor of Arts (B.A.) degree. The Master of Arts (M.A.) program in history is described in the *Graduate School Bulletin*.

*Faculty:* Professor Gutchen, *chairperson*. Professors Briggs, Cohen, Findlay, Kim, Klein, Metz and Weisbord; Associate Professors Bryan, Costigliola, Strom and Thurston; Assistant Professors Brown, Daniel, Honhart, Roughton, Schach-Cook and Silvestri; Adjunct Associate Professor Klyberg.

Students selecting this field of concentration must complete a minimum of 30 credits in history, including a minimum of 6 and a maximum of 12 credits in courses numbered 100 to 299.

The balance of required credits is in courses numbered 300 or above, including one undergraduate seminar, HIS 395. Under unusual circumstances, with permission of the chairman of the department, a student may substitute, in place of the seminar, HIS 391 leading to a substantial research paper.

Undergraduates wishing to take courses on the 500 level must secure the permission of the department.

## Italian

The Department of Languages offers the Bachelor of Arts (B.A.) degree with a concentration in Italian.

*Faculty:* Associate Professor Dornberg, *chairperson* (Department of Languages); Associate Professor Viglionese, *section head*. Professor Capasso; Associate Professor Trivelli.

Students selecting this field of concentration complete at least 30 credits in Italian (27 credits for concentration in secondary education) not including ITL 101, 102, 391, 392, 393, or 395. ITL 325, 326 are required for the concentration.

## Journalism

The Department of Journalism offers the Bachelor of Arts (B.A.) degree.

*Faculty:* Professor Doctor, *chairperson*. Associate Professors Batroukha and Thompson; Assistant Professors List and Snodgrass.

Students selecting this field of concentration must complete a minimum of 30 credits in the print or broadcast journalism sequence, including JOR 110 (3), 212 (3), 434 (3), 438 (3).

Those following the print sequence must complete JOR 325 (3) and one from the group JOR 324 (3), 326 (3), or 436 (3).

Those following the broadcast sequence must complete JOR 271 (3) and 372 (3).

Additionally, all students must complete at least 12 more credits in courses offered by the Journalism Department, not more than 6 of which may be in internships. All journalism students are required to type.

## Languages

The Department of Languages offers the Bachelor of Arts (B.A.) degree in classical studies, French, German, Italian, Linguistics, Russian, and Spanish, which are described in alphabetical order, as well as courses in Portuguese.

*Faculty:* Associate Professor Dornberg, *chairperson*.

## Latin American Studies

The Departments of Sociology and Anthropology, History, and Languages offer a Bachelor of Arts (B.A.) degree in Latin American Studies. Students selecting this field of concentration must complete a minimum of 36 credits, as follows:

APG 315, HIS 381, 382 and one additional history course dealing with the area of concentration; 6 credits in Spanish or Portuguese from the approved list, LAS 397, PSC 201, ECN 363, and 9 credits of electives from approved list of courses.

Credits leading to the B.A. in Latin American Studies may also be taken at foreign universities or other universi-

ties in the U.S. having Latin American Studies programs with the approval of the Latin American Studies Committee.

A list of required and suggested courses acceptable for this program can be found on page 114. Courses not listed are not necessarily excluded from this program, provided that the subject matter deals in some way with Latin America. The Latin American Studies Committee must approve the student's program including any course substitutions.

The Latin American Studies Committee will assist students in the formulation and approval of their programs. The current chairperson is Thomas Morin, associate professor of Hispanic studies in the Department of Languages.

## Linguistics

The Department of Languages offers the Bachelor of Arts (B.A.) degree with a concentration in linguistics.

*Faculty:* Associate Professor Dornberg, *chairperson* (Department of Languages); Associate Professor Rogers, *section head.* Professor Porter.

Students selecting this field of concentration must complete a minimum of 27 credits, as follows: at least 12 credits from LIN 201, 202, 302, 330, 402, 497, 498; and the remaining credits necessary to complete the minimum requirement from APG 200, 409; ENG 330, 332, 430, 530, 536; FRN 503, 504; GER 409; ITL 408; LIN 414; PHL 440; SPA 409; SPE 373, 375, 410.

They must also attain competence in at least one language other than English equivalent to the terminal level of 206.

## Mathematics

The Department of Mathematics offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in mathematics are described in the *Graduate School Bulletin.*

*Faculty:* Professor Roxin, *chairperson.* Professors Datta, Driver, Fraleigh, Ladas, Lewis, P. T. Liu, Sine, Shisha, Suryanarayan and Verma; Associate Professors Beauregard, R. Caldwell, Finizio, Grove, Montgomery, Pakula, Papadakis and Schwartzman; Assistant Professors Barron and Schonbek.

### BACHELOR OF ARTS

Students in this curriculum may tailor a program to suit their individual needs and interests. They should meet with their adviser no later than the end of the first semester of the sophomore year to plan a complete program. This program, and any subsequent changes in it, must be approved by the adviser and the department chairperson. It must contain at least 30 credits in mathematics, and include MTH 141 (3), 142 (3), 215 (3), and 243 (3) as well as two courses at the 400 level.

MTH 107, 108, and 109 are not open to students majoring in mathematics.

### BACHELOR OF SCIENCE

Students in this curriculum may follow the four-year general program in mathematics or select the option in applied mathematics during the junior and senior years.

The general program is designed to include the basic theories and techniques of mathematics. The required courses introduce the student to the principal areas of mathematics, and they provide a foundation for advanced study at the graduate level.

The applied mathematics option is intended for the student who anticipates a career as an applied mathematician or mathematical consultant with an organization such as an industrial or engineering firm or a research laboratory. The student learns the mathematical ideas and techniques most often encountered in such work, and is trained to solve mathematical problems. Although a theoretical foundation is developed, the emphasis is practical.

The following courses, totaling 12 credits, are required for students in both the general program and the option in applied mathematics: MTH 141, 142, 215, 243. These courses normally should be taken in the freshman and sophomore years. MTH 107, 108 and 109 are *not* open to students majoring in mathematics.

A student selecting the general program must complete, in addition to the courses listed above, 27 credits in mathematics, including MTH 435, 437, 438 and 6 credits selected from MTH 316, 425, and 462.

Furthermore, the student in the general program must complete a minor concentration of 18 or more credits in one of the following four areas: biological sciences (biology, botany, microbiology, zoology); physical sciences (astronomy, chemistry, geology, physics); social sciences (economics, geography, political science, psychology, sociology); computer science. Six credits in computer science may be counted toward the minor concentration in any of the first three areas. The program must include PHY 213, 285, and 214, 286.

Students selecting the applied mathematics option must complete, in addition to the 12 credits listed above, 30 credits as follows: MTH 437, 438, CSC 201, and 202 (12); 9 additional credits[8] selected from MTH 143, 217, 244, 418, 435, 441, 444, 451, 452, 462, 471, 472; and 9 additional credits from CSC 411, 413, ELE 210, EST 409, IDE 432, 433, MCE 162, 263, MGS 365, 366, 375, 445, PHY 213-285, 214-286, 322, 331, 341.

A student who intends to do graduate work in mathematics is advised to also take MTH 316.

A total of 130 credits is required for graduation.

## Medical Technology

This curriculum, leading to the Bachelor of Science (B.S.) degree, prepares men and women for work in hospitals or medical laboratories. During the first three years, the emphasis is on general education and basic courses in biology, chemistry, mathematics, and physics necessary as background in the applied sciences. The courses of the senior year are taught off campus by the staffs of affiliated hospital schools of medical technology. The senior year is a 12-month program of study and starts

[8]To gain experience using mathematics in a variety of applications the student is encouraged to select, in addition to the required nine credits, as many electives from this list as possible.

soon after completion of the third year of the curriculum, in June or early July. It is taken at one of the following hospitals which are about 30 miles from the main campus of the University: Miriam Hospital, Rhode Island Hospital, St. Joseph Hospital, which are in Providence; the Memorial Hospital of Pawtucket; or the Rhode Island Medical Center in Cranston. The clinical program includes didactic and laboratory instruction in the various areas of medical technology and prepares the student for the national certification examinations.

Applicants to this curriculum should have completed 62-65 credits by June of the sophomore year and should have taken all courses listed below for the first two years. Students are selected by the University Committee on Medical Technology and by program officials of the hospital schools. Since the number of students admitted to this professional curriculum is limited, interested students should consult early in their college career with the director so that they will be familiar with the requirements and application procedures. Flexibility in the curriculum permits the student who is not accepted to fulfill requirements for the Bachelor of Science degree in another concentration such as microbiology, zoology, or certain related health sciences.

A total of 130 credits is required for graduation.

*Freshman Year*
*First semester: 14 credits*

CHM 101, 102 or CHM 103, 105 (4), BOT 111 or ZOO 111 (4), MTH 141[9] (3), and general education requirement (3).

*Freshman Year*
*Second semester: 17 credits*

CHM 112, 114 (4), ZOO 111 or BOT 111 (4), MTH 141 or 142 (3), general education requirements (6), and language[10] or free elective (3).

*Sophomore Year*
*First semester: 16 credits*

CHM 227 (3), PHY 111 (4), and general education requirements (9).

*Sophomore Year*
*Second semester: 18 credits*

CHM 226 (2), CHM 228 (3), PHY 112 (4), general education requirements (6), and free elective (3).

*Junior Year*
*First semester: 18 credits*

MIC 211 (4), CHM 212 (4), MTC 301 (1), general education requirements (6), and free elective (3).

*Junior Year*
*Second semester: 15 credits*

MIC 432 (3), biology elective (3), and free electives (9).

*Senior Year*
*32 credits*

MTC 401, 402, 403, 404, 405, 406, and 407.

## Military Science

The Department of Military Science offers the Reserve Officers Training Corps (ROTC) program described on page 14.

*Faculty:* Professor O'Grady, *chairperson*. Assistant Professors Jones, Larson, Sanfason and Watson.

## Music

The Department of Music offers a Bachelor of Arts (B.A.) degree and a Bachelor of Music (B.Mus.) degree. The Master of Music (M.M.) degree is described in the *Graduate School Bulletin*.

*Faculty:* Professor Burns, *chairperson*. Professors Abusamra, J. S. Ceo, Giebler, Kent, Motycka and Rankin; Associate Professors Dempsey, Fuchs, Gibbs and Pollart; Assistant Professor Wry; Special Artist Instructors Casher, Ceo, Chapple, Crook, DiNunzio, Erickson, Fraioli, Heiken, Hunt, Immonen, Langdon, Mattera, Piacitelli and Stabile.

### BACHELOR OF ARTS

Students selecting music as a concentration will complete 30 credits as follows: MUS 113, 114 (6), 215, 216 (6), 221, 222 (6), 251 (6), 317 (3), and upper division music history and literature (3).

The equivalent of MUS 101 is required as a prerequisite to MUS 221, 222. This may be met either by a placement examination or by taking the course as an elective. Transfer credits in music theory and performance must be validated by placement examination.

To conform with the requirements of the National Association of Schools of Music of which the department is a member, it is strongly recommended that at least 6 and up to 15 elective credits be taken in upper-level music courses. No more than 6 elective credits will be allowed in any one area: theory and composition, history and literature, and performance. An audition is required for the study of performance.

### BACHELOR OF MUSIC

Students can be admitted to the Bachelor of Music degree program only by audition and should contact the music department for specific requirements.

All students in this degree program must take the following music courses: MUS 113, 114 (6), 215, 216 (6), 221, 222 (6), 250 (0), and 317 (3) for a total of 21 credits. Seven semesters of MUS 250 are required of all Bachelor of Music students. Attendance is required at a minimum of 75 percent of all scheduled afternoon student recitals.

The equivalent of MUS 101 is required as a prerequisite to MUS 221, 222. This may be met either by a placement examination or by taking the course as an elective. Transfer credits in music theory and performance must be validated by placement examination.

All bachelor of music students will take the piano proficiency examination at the conclusion of one year of study or by the end of the second semester of the sophomore year. Failure to pass the proficiency examination or any portion of it requires reexamination in succeeding semesters. No one will graduate with a degree in music until it is passed.

In addition, each student selects one of the following areas of concentration.

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[9]MTH 142 is strongly recommended.

[10]Students are required to complete a modern language at the intermediate (104) level or demonstrate equivalent proficiency by examination.

**Classical Guitar.** Students selecting classical guitar must complete a total of 59 credits, including MUS 261 (12), 312 (2), 393 or 395 (4), 399H (4), 441-tablature (3), 461 (16), 465 (0), upper division theory, composition and/or music history (9), and electives (9).

**Voice.** Students selecting voice must complete a total of 59 credits, including MUS 261 (12), 242 (8), 311 (2), 393 or 395 (8), 461 (16), 465 (0), and electives (13).

Students concentrating in voice must also take 15 credit hours of foreign language in any three or more languages at any level. The requirement may be modified or satisfied by advanced placement.

**Piano or Organ.** Students selecting piano or organ must complete a total of 59 credits, including MUS 261 (12), 393 or 395 (2), 390 or 399A (6), 418 (3), 420 (3), 461 (16), 465 (0), and electives (17).

**Orchestral Instrument.** Students selecting orchestral instrument must complete a total of 59 credits, including MUS 261 (12), 312 (2), 321 (3), 291, 391, or 394 (8), 393 or 395 (2), 418 (3), 420 (3), 461 (16), 465 (0), and electives (10).

**Music History and Literature.** Students selecting music history and literature must complete a total of 59 credits, including MUS 251 (8), 291, 390, 391, 393, 394, or 395 (6), 393 or 395 (2), 407 (3), 408 (3), 418 (3), 420 (3), 431 (3), 432 (3), 433 (3), 434 (3), 441 (3-6), 451 (8), and electives (8-5).

Students concentrating in music history and literature must have 15 credit hours of foreign languages with intermediate level proficiency in at least one language. The requirement may be modified or satisfied by advanced placement.

**Music Theory and Composition.** Students selecting music theory and composition must complete a total of 59 credits, including MUS 251 (8), 241 or 173, 175, 177, 179 and 4 elective credits for piano concentrators (8), 321 (3), 291, 390, 391, 393, 394 or 395 (6), 393 or 395 (2), 418 (3), 420 (3), 423 (3), 441 (3), 451 (8), and electives (12).

Students concentrating in composition must take MUS 117, 419 and 422.

**Jazz Studies.** Students selecting the jazz studies option must complete a total of 59 credits, including MUS 206 (3), 208, 209 (6), 251 (8), 306, 307 (6), 312 (2), 321 (3), 393 or 395 (2), 396 (8), 399M (2), 418 or 420 (3), 451 (8), and electives (8).

**Music Education.** Students majoring in music education must complete a total of 60 credits with specific requirements as follows:

For all students: MUS 171, 172 *pianists exempt* (2), 251 (8), 311, 312 (4), 321 (3), 446 (2), *jazz education specialization exempt*, 451 and/or 452 (8), 455 (0), EDC 102 (3)[11], 312 (3), and 484 (6).

In addition students must select one of the following options:

For general preparation: MUS 173, 174 *vocalists exempt* (2), 169, 170, 175, 176, 177, 178, 179, 180 (8)[12], 341 or 342 (2), 343 or 344 (2), 291, 391 or 394 (2), 393 or 395 (2), and 4 additional credits selected from 391-395 (4). Up to 4 credits of MUS 390 may be substituted for 291, 391-395 electives.

For vocal specialization: MUS 170 *guitarists exempt* (1), 173, 174 *vocalists exempt* (2), 181, 182 *pianists exempt* (2), 242 *pianists exempt* (2), 341, 342 (4), and 393 or 395 (8). Up to 4 credits of MUS 390 may be substituted for 393 or 395.

For instrumental specialization: MUS 169, 175, 176, 177, 178, 179, 180 (7)[12], 343, 344 (4), 291, 391 or 394 (wind and percussion majors must include 2 credits of 291 and 2 credits of 394) (8), and 393 or 395 (2). Up to 4 credits of MUS 390 may be substituted for 291, 391, or 394.

For jazz education specialization: MUS 169, 175-180 (6)[12], 206 (3), 208 (3), 306 (3), 350 (2), 342 or 344 (2), 393 or 395 (2), 291, 391, 393, 394 or 395 (2), 396 (6), and 399M (2).

The piano proficiency examination, EDC 102, 312 and all courses listed above under music education, with the exception of MUS 321 and senior-level courses in performance, instrumental classes and major ensembles, must be completed before entering supervised student teaching. The practice teaching schedule must be preceded by a period of observation.

## Philosophy

The Department of Philosophy offers a Bachelor of Arts (B.A.) degree. The Master of Arts (M.A.) program in philosophy is described in the *Graduate School Bulletin*.

*Faculty:* Professor Wenisch, *chairperson*. Professors Freeman, Y. C. Kim, Peterson, Schwarz and Young; Associate Professors Hanke, Johnson, Kowalski and Zeyl.

Students selecting this field of concentration must complete no less than 30 credit hours in philosophy. Students must take at least one course from each of the following: logic (101, 451), ethics (312, 314, 414), and metaphysics-epistemology (341, 342) plus at least two history of philosophy courses (321 to 324).

The remaining 15 credit hours may be chosen freely from the departmental offerings. However, students planning graduate work in philosophy are advised to take PHL 341, 342 and 451.

## Physics

The Department of Physics offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D) degrees in physics are described in the *Graduate School Bulletin*.

*Faculty:* Professor Pickart, *chairperson*. Professors Bonner, Desjardins, Dietz, Letcher, Malik, Northby and Willis; Associate Professors Cuomo, Hartt, Kaufman, Kirwan, Nunes, and Penhallow; Emeritus Associate Professor, Stone.

### BACHELOR OF ARTS

Students selecting this field of concentration must complete a minimum of 30 credits in physics and mathematics, including: PHY 111, 112 or 213, 214, 285, 286 (8), PHY 322 (3), 331 (3), 381, 382 (6), 401 or 402 (1), 451 (3), 491, 492 (3), MTH 244 (3).

It is strongly recommended that students take MTH 141 and 142 in the

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[11]EDC 102 may also be counted towards the social sciences requirement in the Basic Liberal Studies Program.

[12]One course in the student's major instrument area is exempt.

freshman year. If the student is considering graduate study, it is recommended that courses in French, German or Russian be elected.

BACHELOR OF SCIENCE

This curriculum provides a general background in theoretical and practical physics, and it qualifies the student for industrial research or advanced training in industrial laboratories and in technical bureaus of government. Students also will have an adequate foundation for graduate work leading to higher degrees in physics.

Initiative, independent solution of laboratory problems, and research are encouraged in the advanced laboratory courses.

The following courses will usually be required for the B.S., but exceptions and/or substitutions are possible, and may be arranged upon consultation with the department. For example, a well-prepared student may enroll for physics in the first semester of the freshman year; or courses in a related discipline may be taken instead of physics courses.

A total of 129 credits is required for graduation.

*Freshman Year*
*First semester: 15 credits*

MTH 141 (3) and general education requirements (12).

*Freshman Year*
*Second semester: 16 credits*

MTH 142 (3), PHY 213, 285 (4), and general education requirements (9).

*Sophomore Year*
*First semester: 16 credits*

MTH 243 (3), PHY 214, 286 (4), and general education requirements (9).

*Sophomore Year*
*Second semester: 15 credits*

MTH 244 (3), PHY 334 (3) and 341 (3), and general education requirements (6).

*Junior Year*
*First semester: 18 credits*

Mathematics elective at the 300 or 400 level (3), PHY 322 (3) and 381 (3), general education requirement (3), and free electives (6).

*Junior Year*
*Second semester: 18 credits*

Mathematics elective at the 300 or 400 level (3), PHY 331 (3), 382 (3) and 420 (3), and free electives (6).

*Senior Year*
*First semester: 15 credits*

PHY 483 (3), 451 (3) and 455 (3), and free electives (6).

*Senior Year*
*Second semester: 16 credits*

PHY 484 (3), 402 (1) and 452 (3), and free electives (9).

## Political Science

The Department of Political Science offers the Bachelor of Arts (B.A.) degree. The Master of Arts (M.A.) in political science and Master of Public Administration (M.P.A.) programs are described in the *Graduate School Bulletin*.

*Faculty:* Professor Killilea, *chairperson*. Professors Hennessey, Milburn, Stein, Warren, S. B. Wood and Zucker; Associate Professor Rothstein; Assistant Professors K. Murphy and Tyler.

Students selecting this field of concentration must complete a minimum of 30 credits in political science, including PSC 113 (3) and 116 (3).

The remaining 24 credits will reflect the emphasis desired by the student, though at least one course in four of the following six fields must be selected: American politics and public administration, public law, comparative government, international relations, political theory, and political behavior.

## Portuguese

The Department of Languages offers a number of undergraduate courses in Portuguese.

*Faculty:* Associate Professor Dornberg, *chairperson*. (Department of Languages). Associate Professor McNab; Lecturer Campos.

## Psychology

The Department of Psychology offers the Bachelor of Arts (B.A.) degree. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degree programs in psychology are described in the *Graduate School Bulletin.*

*Faculty:* Professor A. Lott, *chairperson.* Professors Berger, Berman, Biller, Grebstein, B. Lott, Merenda, Prochaska, Silverstein, Smith, Steinman, Vosburgh and Willoughby; Associate Professors Cohen, Collyer, Gross, Kulberg, Stevenson, Valentino and Velicer; Assistant Professors French and Quina-Holland.

Students in this field of concentration may follow either a general program or a preparatory program for an advanced degree.

The general program requires a minimum of 30 credits to be distributed as follows: PSY 113 (3); at least one from the group PSY 232 (3), 235 (3), 254 (3); both PSY 300 (3) and 301 (3), plus additional psychology electives to total 30 credits. Students interested in careers at the B.A. level should consult the *Handbook for Psychology Majors* and their academic advisers to select additional courses.

The preparatory program adds to the requirements listed above: PSY 232 (3), 235 (3) and 254 (3); at least four courses from the group: PSY 310 (3), 381 (3), 385 (3), 391 (3), 434 (3) and 435 (3). Additional courses should be selected only after consultation with an adviser.

## Russian

The Department of Languages offers the Bachelor of Arts (B.A.) degree with a concentration in Russian.

*Faculty:* Associate Professor Dornberg, *chairperson.* (Department of Languages); Associate Professor Aronian, *section head.* Associate Professor Rogers; Assistant Professor Driver.

Students selecting this field of concentration complete at least 30 credits in Russian (27 credits for concentration in secondary education) not including RUS 101, 102.

## Sociology

The Department of Sociology and Anthropology offers the degree of Bachelor of Arts (B.A.) in sociology, The Master of Arts (M.A.) program in sociology is described in the *Graduate School Bulletin.*

*Faculty:* Associate Professor Gelles, *chairperson.* Professors England, Gardner, Gersuny, Rosengren and Spaulding; Associate Professors Bassis, Carroll, Reilly and Wells; Assistant Professors Peters, Shea and Travisano.

Students selecting this field of concentration must complete a minimum of 30 credits in sociology, including: SOC 202 or 208 (3), 301 (3), 492 (3).

SOC 301 should be taken no later than the first semester of the junior year; and 492 is to be taken during the senior year whenever possible. In addition to the above requirements, majors are required to complete at least 6 credits at the 400 level in sociology.

Although the department does not offer a concentration in social welfare, students planning careers in social welfare, may take social welfare courses as electives. These courses do *not* count toward the concentration in sociology. Students interested in anthropology are referred to the anthropology concentration listed previously in this chapter.

## Spanish

The Department of Languages offers the Bachelor of Arts (B.A.) degree with a concentration in Spanish. The Master of Arts (M.A.) program in Spanish is described in the *Graduate School Bulletin.*

*Faculty:* Associate Professor Dornberg, *chairperson.* (Department of Languages); Associate Professor Manteiga, *section head.* Professor Hutton; Associate Professors Morin and Navascués; Assistant Professor Trubiano.

Students selecting Spanish as a concentration will complete a minimum of 30 credits in Spanish (27 credits for concentration in secondary education). One 300-level course, SPA 481, 487, and one other 400-level course are required. SPA 101, 102, 121, 391, 392, and 393 cannot be counted toward the concentration. LIN 201 and 202 and, with permission of the adviser, the section head, the department chairperson, and the dean of the college, courses in allied fields such as history, art, and anthropology may also be selected. These requirements are the same for secondary education concentration.

A summer field workshop (SPA 410) in Spain or Spanish America is occasionally offered for 3 to 6 credits. For information, see the section head.

## Speech Communication

The Department of Speech Communication offers the Bachelor of Arts (B.A.) degree with curriculums in speech communication studies and preprofessional studies in communicative disorders. The Master of Arts (M.A.) degree programs in communicative disorders, i.e., in speech pathology and audiology, are described in the *Graduate School Bulletin.*

*Faculty:* Professor Devlin, *chairperson.* Professors Bailey, Beaupre, Dillavou, Doody and FitzSimons; Associate Professors Anderson, Brownell, Caldwell, Grubman, Grzebien, Katula and Roth; Assistant Professors Hurley, Schultz and Singer; Adjunct Professors Erickson, Robinson and Welch; Instructor Rowland-Morin; Clinical Assistant Professor Regan; Clinical Coordinator Finck.

The department programs provide maximum flexibility in planning for a wide variety of academic and occupational goals in speech communication studies and preprofessional studies in communicative disorders. The curriculum is personalized for each student. While the student plays a dominant role in curriculum planning, his or her program is closely supervised by the adviser. Specific curricular, extracurricular and internship programs are planned as integral parts of each students program. Departmentally approved courses give the student broad variety or specific depth, dependent on the student's needs and goals. Courses outside the department which are related to student communication needs and goals are encouraged and may be counted as concentration credits.

Thirty credits are the minimum required for students concentrating in speech communication.

The undergraduate concentrator in the department may pursue studies in any of the following tracks, dependent upon his or her interests and goals.

**Speech Communication Studies Program.** This concentration requires SPE 101 and 304, at least 3 credits of courses in the preprofessional track, and at least 12 credits of courses at the +300 level. (Students concentrating in the preprofessional program in communicative disorders may substitute SPE 201, 215, 220, or 231 for SPE 101.) Students are required to select 12 of their remaining concentration credits within one of the following options:

Individualized Program. Students in consultation with adviser will plan a program to meet his or her needs.

Business and Professional Communication. Four of the following courses: SPE 201, 210, 215, 220, 315, 317, 320, 400, 415.[13]

Oral Interpretation. Four of the following courses: SPE 201, 231, 331, 332, 333, 337, 410, 431, 433.[13]

Rhetoric and Public Address. Four of the following courses: SPE 210, 215, 317, 320, 337, 400, 420, 430.[13]

Communication Theory. Four of the following courses: SPE 201, 220, 300, 301, 315, 320, 372, 374, 375, 400, 410, 415.[13]

Preprofessional Programs in Communicative Disorders. This concentration requires 12 credits of coursework in speech pathology and audiology (always including SPE 260 and 261), SPE 372, 373, 374, and 375 as preparation for graduate studies.[13]

## Theatre

The Department of Theatre offers a Bachelor of Arts (B.A.) degree and a Bachelor of Fine Arts (B.F.A.) degree. Permission to register for work toward the B.F.A. in theatre must be obtained through a departmental interview.

*Faculty:* Professor Klein, *acting chairperson.* Professor Flannery; Associate Professors Emery, Swift and Wheelock; Assistant Professor Glosson; Technical Director Galgoczy; guest artists supplement the regular faculty in all areas of theatre.

Productions at the University cover the range of theatre forms, ancient to modern, with emphasis on contemporary and experimental work. All members of the University community may participate in productions.

BACHELOR OF ARTS

The B.A. program in theatre is intended for students who wish to receive a general education in theatre within a liberal arts framework. A total of 33 credits is required as follows: THE 111 (3); 117 (3); 161 (3); 181 (3); 221 (3); 250 (3); 261 (3); 321 (3); 381, 382 (6); 383 or 481 (3). B.A. candidates are urged to complete THE 111, 117, 161, and 181 by the end of their freshman year.

B.A. candidates are also required to take HIS 113 or 114 in partial fulfillment of the Letters Division requirements and ENG 472 or 473. B.A. candidates may elect up to 12 more credits in theatre with the approval of their department adviser.

BACHELOR OF FINE ARTS

The B.F.A. program in theatre is intended for highly motivated students who wish to receive an education with an emphasis in their major theatrical field of interest. The program offers concentrated study in acting, design, and theatre technology. All B.F.A. students are required to complete the following core courses: THE 111, (3); 117 (3); 161 (3); 181 (3); 221 (3); 250 (3); 261 (3); 381, 382 (6). All B.F.A. candidates are urged to complete THE 111, 117, 161, and 181 by the end of their freshman year.

In addition to these requirements each student selects one of the following areas of specialization:

**Acting.** Students selecting acting must complete a total of 26 credits including the following: THE 211, 212 (6); 311, 312 (8); 350 (1); 351 or 352 (3); 411, 412 (8). Recommended electives include THE 205, 206; 215, 216, 322; 413; 484; HIS 113, 114, and courses in related fields such as anthropology, art, music, literature, psychology, history, speech, and sociology.

**Design and Theatre Technology.** Students selecting design and theatre technology must complete a total of 25-28 credits including THE 262 (3); 350 (1); 2 out of 3 of the following course groups: 1) 351, 352, 355 (9); 2) 361, 365, 366 (9); 3) 371, 375 (6); 2 out of the 3 following courses: 455, 465, 475 (6). Recommended electives include THE 351, 352; 361; 451; 463; 484; ART 207, 251, 252, HIS 113, 114, and courses in related fields such as anthropology, art, literature, music, psychology, history, and sociology.

B.F.A students selected for an internship program may substitute up to 9 credits from theatre courses in their area of specialization, subject to the approval of the department. Requirements for the B.F.A may be modified under special circumstances by permission of the department.

A total of 124 credits is required for graduation. All B.F.A. candidates must take ENG 472 or 473.

## Urban Affairs

The Urban Affairs Program Coordinating Committee offers three concentrations in the College of Arts and Sciences for the Bachelor of Arts (B.A.) degree: Urban Social Processes in the Urban Environment, Policy Formation in the Urban Environment, and Spatial Development in the Urban Environment. The courses that comprise these concentrations are offered by colleges throughout the University.

The Urban Affairs Program is described on page 12.

Students who select one of these three concentrations must complete five courses chosen from the core for the concentration, three or four courses chosen from the remaining courses, and one or two semesters in the Senior Seminar in Urban Affairs. Each of the concentrations requires a minimum of 30 credits.

Students who wish to major in one of these concentrations should consult the appropriate member of the Urban Affairs Program Coordinating Committee for assistance in the formulation and approval of their concentrations.

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[13]Students will individualize the remaining credits in consultation with their adviser.

**Urban Social Processes.** This concentration examines the functions of urban social systems, explores urban social issues which affect the lives of individuals in an urban environment, and investigates individual and systems-change strategies. Students gain an understanding of the systemic forces which act on individuals in urban societies to produce both positive and negative outcomes. Poverty and social class, the welfare system, race, crime, rapid environmental change, all generate social issues which take on particular significance in an urban setting and have a dramatic impact on the lives of urbanites. In addition to a thorough grounding in theory, students are directed toward research and intervention techniques which they may extend, with graduate training, into the social sciences, criminology, social work, community planning, and other urban-oriented fields. Students seeking jobs at the baccalaureate level may work in social agencies (e.g. welfare, youth development, the criminal justice system), the governmental departments which sponsor and monitor these agencies, or specialized educational facilities (e.g. halfway houses, preschool enrichment programs, alternative high schools).

Students are expected to satisfy the common core requirements. In addition, they must select one of the following courses to satisfy methodological skills: APG 402; EST 408, 409; PSY 300; SOC 301.

Students are also required to select 4 courses from the following: APG 319; ECN 401, 403; HCF 220, 480; HIS 339, 343; HMG 401; MGT 301; PSC 420, 483, 486; PSY 435; SOC 314, 316, 330, 336, 340, 410, 418, 438; SPE 315. Students are encouraged to arrange for an urban affairs internship.

**Policy Formation.** This concentration identifies the decision-making processes within the metropolis, examines the ways in which public policies are formulated and implemented, and considers ideas about the substance as well as the outcome of the policy-formation processes. An understanding of such decision-making processes requires knowledge of the political, administrative, managerial, planning, and economic aspects of urban life. Students completing the concentration should be prepared for entry-level administrative jobs in government agencies, business firms and community organizations, or for activist careers in politics. They might undertake graduate work in law, public administration, community planning, business, or related disciplines.

Students are expected to satisfy the common core requirements. In addition, they are required to select one course from PSY 300; SOC 301; MGS 201; MTH 451; EST 408, 409; GEG 482; to satisfy the methodological skill requirements. They are also required to select three courses from the following: ECN 342, 401, 402, 403, 464; HIS 323, 324, 339, 340, 341, 343, 363; PSC 460, 466, 483, 495, 498; CPL 410; FIN 341, 396; MGT 321, 422, 423; REN 310; GEG 411, 421, 452, 512; SOC 336, 340, 342, 434, 436. Practicum or internship experience is required in this concentration. It may be obtained through URB 397.

**Spatial Development.** This concentration gives the student an interdisciplinary viewpoint of the spatial structure and environmental character of the city. The curriculum is designed to focus special attention on the arrangement, allocation and interrelationships of human and physical resources. Man's relation to the urban ecosystem is examined in terms of the processes, patterns, networks and activities that produce the spatial and temporal organization of urban communities. Analytical and methodological skills may be acquired from courses in cartography, remote sensing, and statistics. The structure of the concentration should prepare the student to deal effectively with the increasing problems of rapid urban growth and environmental deterioration.

Employment opportunities are available in such activities as urban systems analysis, economic impact studies, cartographic drafting and air photo analysis, industrial location and regional development, and urban environmental problems. Spatial development students should be prepared for work in organizations or agencies that handle questions such as equal allocation of resources, reduction of regional disparities in goods and services, and developing effective alternatives to problems in housing, poverty, pollution, and other human concerns. These organizations can be in either the private or the public sector.

Students are expected to satisfy the common core requirements. In addition, they are required to select one course from EST 408, SOC 301, GEG 482 and a course from GEG 421, PLS 343 and ESC 301 to satisfy the methodological skill requirements. They are also required to select three courses from the following: HIS 399; CPL 410, 434, 520; ZOO 262, HMG 340; FIN 341; PSC 460, 466; SOC 434; ECN 402; GEG 512; INS 313; BSL 333; CVE 315; EGR 204. Students are encouraged to acquire an internship experience.

## Women's Studies

This new interdepartmental program in the College of Arts and Sciences leads to a Bachelor of Arts (B.A.) degree in Women's Studies. The aim of the program is to provide an option for students who are interested in the interdisciplinary study of the culture and experiences of women.

The Women's Studies program requires 30 credits for a concentration. Four required courses are: WMS 200; a statistics (e.g., EST 220, PSY 300) or methodology course (e.g., ENG 310, SOC 301, SPE 304) approved by the Advisory Committee; WMS 300; and WMS 400. Six courses to complete the concentration may be selected from the following: ART 280 (Topic: Women in Art), ENG 360A, 360B, 360C, 385, HCF 330, 430, 432, 505, 559, HIS 118, 145, 347, HMG 320, NUR 150, PSY 480, SOC 312, 342, 513, SPE 310 (Topic: Rhetoric of the Women's Movement), and SPE 420 (Topic: Rhetoric of Early Women Suffragists). In addition to this list, there are special courses offered by various departments each year which may also be selected with prior approval by the Advisory Committee.

The Women's Studies Advisory Committee also strongly recommends that concentrators take an additional 18 credits in a specialized area as an "area of interest."

# College of Business Administration

Richard R. Weeks, *Dean*
John R. Wish, *Associate Dean*
Hilda A. Allred, *Assistant Dean*
Everett T. Harris, *Assistant Dean for Administration*

The 16 curriculums in the College of Business Administration allow the student to develop competence in a special field of interest and prepare him or her to meet the changing complexities of life and leadership in the business community. Curriculums are offered in accounting with emphasis possible on governmental, private, and public accounting; business education with options in distributive education, social/business-secretarial, training director, and administrative management; finance; general business administration; insurance; management; management information systems; management science; marketing; marketing with a textiles option; production and operations management; real estate; and urban business.

Basic courses required of all undergraduates at the University introduce the student to the humanities, social sciences, physical and biological sciences, and the arts. The business curriculums develop the student's professional capabilities through a broad group of business courses with specialization in one area of study. Business programs provide a strong foundation in accounting, computer science, marketing, organizational management and industrial relations, production and operations management, and statistics. The college emphasizes the behavioral studies and computer technology to meet the needs of the business community and society as a whole. Emphasis is placed upon the total business environment as a part of the national and world economic structure. Theory, analysis, and decision-making are stressed in all areas of learning.

The College of Business Administration is a professional school and has divided its courses into lower and upper divisions. The lower division courses constitute those taught in the freshman and sophomore years; the upper division — those taught in the junior and senior years. Courses taken by transfer students at the lower division level may be applied to satisfying upper division requirements only after successful completion of a validating examination. All 500- and 600-level courses offered by departments in the College of Business Administration are open to matriculated graduate students only.

A student enrolled in this college must complete the curriculum in one of the major areas of concentration and must obtain a cumulative quality point average of 2.00 or better for all required courses in the major area of concentration. Students wishing permission to substitute required courses or waive other requirements may petition the college's Scholastic Standing Committee. Petition forms are available in the dean's office.

Due to limited staff and facilities, transfers from University College to the undergraduate degree programs in business administration must be limited. Although cumulative averages are not the sole criterion for admission, students with overall quality point averages of less than 3.0 are advised that there is little chance for admission to these programs. Students who have not satisfied entrance requirements may petition the Scholastic Standing Committee of the college for a waiver of those requirements during their fourth or succeeding semesters. Students in the University College business programs who have not met entrance requirements to the college are permitted to enroll only in 100- and 200-level business courses and in non-business courses.

To ensure that students in business majors have access to required courses, upper level courses will be open only to juniors, seniors, and graduate students. A strict registration priority will be followed. Highest priority will be given to seniors in the College of Business Administration and in the major, followed by graduate students, juniors in the college and the major, seniors in the college but not in the major, juniors in the college but not in the major, seniors in other colleges, and juniors in other colleges. Students following an approved area of interest will be assigned as though they were in the college but not in the major.

## Curriculum Requirements

The following two years are common to all curriculums except business

education, office administration, and marketing textiles option.

**The Freshman Year Program** is 15 credits in each semester. The sequence MGS 101-102 is begun in the first semester and finished in the second. A speech elective from Group C is taken in either of the two semesters with the balance of credits in general education and liberal electives.

**The Sophomore Year Program** is 15 credits in each semester. The ACC 201-202, ECN 125-126, and MGS 201-202 sequences are begun in the first semester and completed in the second. BED 227 and MGS 207 are taken in alternate semesters. The balance of credits is made up of general education and liberal electives.

**General Education Requirements.** Students are required to select and pass 39 credits of coursework from the general education requirements as listed on page 9. Specific requirements of the College of Business Administration in each group are listed below:

*Groups A, F, L, and N.* Any course for which prerequisites have been met.

*Group M.* MGS 101 in the freshman year.

*Group S.* ECN 125, 126 in the sophomore year.

*Group C.* Speech elective from Group C in the freshman year; BED 227 (Group Cw) in the sophomore year.

**Electives.** Professional electives are upper-level courses offered by departments in the College of Business Administration.

Liberal electives are courses offered by departments outside the College of Business Administration.

Free electives may be either professional or liberal electives.

**Area of Interest — Optional.** After choosing a major field, students may elect to declare an area of interest which will appear on their transcripts as a category separate from their major. Credit may be drawn from any combination of concentration, distribution, electives, and course-level categories. An area of interest may be defined as (1) the completion of 18 or more credits offered within a department and approved by the department chairperson or (2) the completion of 18 or more credits or related studies offered by more than one department and approved by a member of the University faculty, competent in the area of interest, and the Scholastic Standing Committee of the College of Business Administration. Students must declare their area of interest no later than the beginning of the semester they expect to graduate.

## Accounting

The Department of Accounting offers a curriculum leading to the Bachelor of Science (B.S.) degree. The Master of Science (M.S.) degree, which provides the education recommended by the American Institute of Certified Public Accountants for the practice of public accounting, and the Master of Business Administration (M.B.A.) degree with an opportunity for specialization in accounting are described in the *Graduate School Bulletin.*

*Faculty:* Professor Vangermeersch, *chairperson.* Professor Martin; Associate Professors Matoney, Schwarzbach, Swanson and P.S. Wood; Assistant Professors Cairns, Hamilton, Looney and St. Pierre; Special Instructor Fradin.

The increased scope of governmental and business activities has greatly extended the field of accounting and has created an unprecedented demand for accountants both in government and in industry. This curriculum has been designed to meet that demand.

In addition to providing a general cultural and business background, the curriculum offers specialized training in the fields of general accounting, cost accounting, and public accounting. It offers specific, basic training to students who wish to become general accountants, industrial accountants, cost analysts, auditors, credit analysts, controllers, income tax consultants, teachers of specialized business subjects, certified public accountants, government cost inspectors, government auditors.

The broad scope of the courses offered makes it possible for a student who is interested in any of the fields of accounting to obtain fundamental training in the field of his or her choice, whether this training is to be used as an aid to living or as a basis for graduate study.

*Junior Year*
*First semester: 15 credits*

ACC 311 and 321, ECN 327 or 328, FIN 301, and MGT 301.

*Junior Year*
*Second semester: 15 credits*

ACC 312, 443, MKT 301, MGS 309, and either ACC 415 or MGS 364.

*Senior Year*
*First semester: 15 credits*

ACC 431 and 461, BSL 333, and 6 credits in free electives.

*Senior Year*
*Second semester: 15 credits*

BSL 334 or 442, MGT 410, an accounting elective, a professional elective, and a free elective.

## Business Education

The Department of Business Education and Administrative Services offers a curriculum leading to the Bachelor of Science (B.S.) degree. The Master of Science (M.S.) degree in business education is described in the *Graduate School Bulletin.*

*Faculty:* Associate Professor Sink, *acting chairperson.* Associate Professors Allred and K. F. Smith.

Four concentrations are available in the curriculum: social business-secretarial, distributive education, training director, and administrative management.

The social business-secretarial and distributive education concentrations, which fulfill the requirement of the Rhode Island State Board of Education for certification, offer students an opportunity to prepare themselves to become teachers of business subjects.

The training director and the administrative management concentrations prepare students to assume responsible positions in business, industry, and government service as training specialists or administrative assistants.

In addition to business and education courses, the programs also pro-

vide a broad liberal background.

The curriculum for the freshman year is common to all concentrations.

*Freshman Year*
*First semester: 17 credits*

BED 121, MGS 101 (Group M), a speech elective from Group C, one elective each from Groups A, F, and N.

*Freshman Year*
*Second semester: 17 credits*

BED 122, MGS 102 (Group M), PSY 113, one elective each from Groups A, F, and L.

**Distributive Education Concentration[1]**

*Sophomore Year*
*First semester: 18 credits*

ACC 201, MGS 201, ECN 125 (Group S), EDC 102, MGS 207, and an elective from Group L.

*Sophomore Year*
*Second semester: 15 credits*

ACC 202, MGS 202, ECN 126 (Group S), EDC 312 and BED 227 (Group Cw).

*Junior Year*
*First semester: 15 credits*

ACC elective (300 level), EDC 430, BSL 333, MKT 301, MGT 301.

*Junior Year*
*Second semester: 15 credits*

BSL 334, BED 326, FIN 301, MGS 309, MKT elective (300 level).

*Senior Year*
*First semester: 18 credits*

BED 427 and 428, MGT 410, MKT elective (300 level), and two free electives.

*Senior Year*
*Second semester: 12 credits*

EDC 484 and 485.

**Social Business/Secretarial Concentration[2]**

*Sophomore Year*
*First semester: 18 credits*

ACC 201, MGS 201, ECN 125 (Group S), EDC 102, MGS 207, and an elective from Group L.

*Sophomore Year*
*Second semester: 18 credits*

ACC 202, MGS 202, ECN 126 (Group S), EDC 312, BED 227, and a free elective.

*Junior Year*
*First semester: 16 credits*

ACC elective (300 level), BED 321, EDC 430, BSL 333, and MKT 301.

*Junior Year*
*Second semester: 16 credits*

BED 322 and 326, MGS 309, FIN 301, and MGT 301.

*Senior Year*
*First semester: 16 credits*

EDC 424 and 421, BED 428, MGT 410, and a free elective.

*Senior Year*
*Second semester: 12 credits*

EDC 484 and 485.

**Training Director Concentration[3]**

*Sophomore Year*
*First semester: 15 credits*

ACC 201, BED 227 (Group Cw), ECN 125 (Group S), MGS 201, and 207.

*Sophomore Year*
*Second semester: 15 credits*

ACC 202, ECN 126 (Group S), MGS 202, an elective from Group L, and a liberal elective.

*Junior Year*
*First semester: 15 credits*

EDC 371, MKT 301, BSL 333, MGT 301, and a liberal elective.

*Junior Year*
*Second semester: 14 credits*

EDC 450, BSL 334, FIN 301, BED 326, and a free elective.

*Senior Year*
*First semester: 15 credits*

EDC 401, BED 426, MGT 303, MGS 309, and a liberal elective.

*Senior Year*
*Second semester: 12 credits*

BED 328, MGT 410, and two professional electives.

**Administrative Management Concentration[4]**

*Sophomore Year*
*First semester: 15 credits*

ACC 201, BED 227 (Group Cw), ECN 125 (Group S), MGS 201, and 207.

*Sophomore Year*
*Second semester: 15 credits*

ACC 202, ECN 126 (Group S), MGS 202, a free elective, and a liberal elective.

*Junior Year*
*First semester: 16 credits*

BED 321, BSL 333, MKT 301, MGT 301, and a liberal elective.

*Junior Year*
*Second semester: 13 credits*

BED 322 and 326, BSL 334, and FIN 301.

*Senior Year*
*First semester: 15 credits*

MGS 483 and 309, EDC 401, MGT 303, and a liberal elective.

*Senior Year*
*Second semester: 14 credits*

BED 324 and 328, MGT 410, a professional elective, and a free elective.

## Finance

The Department of Finance and Insurance offers a curriculum in finance leading to the Bachelor of Science (B.S.) degree. The Master of Business Administration (M.B.A.) degree with an opportunity for specialization in finance is described in the *Graduate School Bulletin*.

*Faculty:* Associate Professor Lord, *acting chairperson.* Professor Poulsen; Associate Professors Dash, Fitzgerald and Koveos; Assistant Professor Carlson.

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[1]If students choose the six credits of free electives as education courses, the total program can be reduced by six credits. Students can waive BED 121 by passing BED 122; however, equivalent credits of free electives must be substituted.

[2]If students choose six credits of the free electives as education courses, the total program can be reduced by six credits. Students can waive BED 121 without substitution by passing BED 122. Also, students can waive without substitution BED 321 by passing a five-minute 80 WPM proficiency test.

[3]Students can waive BED 121 by passing BED 122; however, two credits of free electives must be substituted.

[4]Students can waive BED 121 by passing BED 122, and students can waive BED 321 by passing BED 322; however, equivalent credits of free electives must be substituted.

A concentration in finance prepares for managerial positions in the private, public and not-for-profit sectors of the economy. The curriculum emphasizes both financial decision-making and implementation.

Careers in finance are to be found in (1) commercial banking and other financial institutions; (2) security analysis, portfolio, and related investment management; (3) corporate financial management leading to positions as treasurer, controller, and other financial administrative positions; (4) financial administration tasks in federal and state agencies as well as in the non-profit sector in hospitals, nursing homes, and educational institutions.

*Junior Year*
*First semester: 15 credits*

BSL 333, FIN 301 and 331, MGT 301, and a liberal elective.

*Junior Year*
*Second semester: 15 credits*

FIN 322, MGS 309, MKT 301, a professional elective, and a liberal elective.

*Senior Year*
*First semester: 15 credits*

Finance elective, three professional electives, and a free elective.

*Senior Year*
*Second semester: 15 credits*

Two finance electives, MGT 410, a professional elective, and a free elective. Finance electives must be drawn from FIN 401, 420, 425, 431, 433, 442, 452, and 460.

## General Business Administration

The College of Business Administration offers a curriculum in general business administration leading to the Bachelor of Science (B.S.) degree. The general business administration curriculum offers the student an opportunity to study all phases of business operation. It is particularly suitable for (1) those students who are planning to operate their own businesses and are seeking a broad business background, (2) those who are preparing for positions in large organizations with training programs in which specialization is taught after employment, and (3) those who desire a general business background at the undergraduate level prior to taking more specialized graduate work.

Students who major in the general administration curriculum shall be limited to a maximum of 9 credit hours of professional electives in a specific major or concentration. A general business administration student should take a broad spectrum of courses and not concentrate in one special field of study.

*Junior Year*
*First semester: 15 credits*

FIN 301, MGS 309, MKT 301, MGT 301, and a free elective.

*Junior Year*
*Second semester: 15 credits*

FIN elective, an MKT elective, and MGT elective at the 300 level, INS 301, and a free elective.

*Senior Year*
*First semester: 15 credits*

BSL 333, two professional electives, and two free electives.

*Senior Year*
*Second semester: 15 credits*

MGT 410, three professional electives, and a free elective.

## Insurance

The Department of Finance and Insurance offers a curriculum in insurance leading to the Bachelor of Science (B.S.) degree. The Master of Business Administration (M.B.A.) degree with an opportunity for specialization in insurance is described in the *Graduate School Bulletin*.

Insurance is a basic industry which functions throughout the economy to indemnify loss and reduce risk. In performing these functions, insurance companies, through their home and branch offices, their agencies and bureaus, currently employ about a million persons in a great variety of jobs (selling, administrative, technical, research, etc.).

For success in this industry, the professional concept with its emphasis on expert knowledge has become increasingly important, and students in this curriculum are prepared for and encouraged to work toward the professional designations conferred by the American College of Life Underwriters (C.L.U.) and the American Institute of Property and Liability Underwriters (C.P.C.U.).

The curriculum offers comprehensive preparation for diversified career opportunities in insurance, including satisfaction of state requirements for agents' and brokers' licenses in fire and marine, casualty and surety, and life and accident-sickness fields. It is approved by state insurance departments in Rhode Island and New York.

*Junior Year*
*First semester: 15 credits*

BSL 333, FIN 301, INS 301, MGT 301, and a professional elective.

*Junior Year*
*Second semester: 15 credits*

INS 313, MGS 309, MKT 301, a professional elective, and a free elective.

*Senior Year*
*First semester: 15 credits*

INS 314 and 333, a liberal elective, and two free electives.

*Senior Year*
*Second semester: 15 credits*

INS 322 and 325, MGT 410, and two professional electives.

## Management

The Department of Management offers a curriculum leading toward the Bachelor of Science (B.S.) degree. The Master of Business Administration (M.B.A.) degree with an opportunity for specialization in management is described in the *Graduate School Bulletin*.

*Faculty:* Professor Overton, *chairperson*. Professors Coates, deLodzia and Schmidt; Associate Professors Allen, Callaghan, Comerford and Sisco; Assistant Professors Laviano and Scholl.

This curriculum is intended to provide the student with a background in the conceptual, analytical, and applied aspects of the management of organizations. The areas of study focus upon decision-making from the perspective of the policy sciences.

Courses tend to cluster in the areas of behavioral science, including organizational theory, business law, general business administration and policy, and industrial and labor relations. Courses are carefully integrated to include an overall introduction to business administration, with a number of complementary areas of study in organizational theory and behavior, the management of human resources, industrial and labor relations, personnel administration, general business administration, and business law.

Careers in business, government, hospitals, and other organizations are open to students who have sucessfully completed the curriculum. These studies also provide a good background for graduate programs in management.

*Junior Year*
*First semester: 15 credits*

FIN 301, MKT 301, MGT 301, one professional elective, and one free elective.

*Junior Year*
*Second semester: 15 credits*

MGS 309, MGT 304, 305, one free elective, and one liberal elective.

*Senior Year*
*First semester: 15 credits*

BSL 333, MGT 303, 380, and 407, and a free elective.

*Senior Year*
*Second semester: 15 credits*

MGT 410 and 423, one professional elective, and two free electives.

## Management Information Systems

The Department of Management Science offers a curriculum in management information systems leading toward the Bachelor of Science (B.S.) degree. The field of information systems is concerned with the collection, storing, processing, structuring, retrieval, and reporting of information to assist managers in the operations, management, and decision-making functions of an organization.

The program provides a thorough grounding in computer technology, systems analysis, combined with business and management training.

*The Freshman and Sophomore Year Programs* are like all other business majors except that in the sophomore year MGS 207 is taken in the first semester and CSC 202 and 283 are taken in the second semester instead of an elective.

*Junior Year*
*First semester: 15 credits*

BSL 333, FIN 301, MGS 309, MKT 301, CSC 311.

*Junior Year*
*Second semester: 15 credits*

MGT 301, MGS 364, 483, professional electives.

*Senior Year*
*First semester: 14 credits*

MGS 485, MGS elective, professional elective, and free electives.

*Senior Year*
*Second semester: 15 credits*

MGS 486, MGT 410, MGS elective, professional elective, and a free elective.

## Management Science

The Department of Management Science offers a curriculum in management science leading to the Bachelor of Science (B.S.) degree. The Master of Business Administration (M.B.A.) degree with an opportunity for specialization in management science is described in the *Graduate School Bulletin.*

*Faculty:* Associate Professor McLeavey, *chairperson.* Professors Armstrong, Jarrett, Koza, Mojena and Shen; Associate Professors Ageloff, Budnick, Humphrey and Sternbach; Assistant Professor Mangiameli.

Management science (MGS) is concerned with the development and application of quantitative techniques to the solution of problems faced by managers of public and private organizations. More specifically, theory and methodology (tools) in mathematics, probability, statistics, and computing are adapted and applied in the identification, formulation, solution, implementation, control, and evaluation of administrative or decision-making problems.

The MGS concentration relates to the interface between quantitative techniques and their application in the real world. Upon graduating, majors will be qualified for (1) staff positions responsible for implementing and communicating quantitative approaches to decision-making, (2) management trainee programs which lead to assignments in any of the functional areas of an organization, or (3) graduate study leading to a master's degree or a doctorate.

*Junior Year*
*First semester: 15 credits*

BSL 333, FIN 301, MGS 301, MKT 301, and a free elective.

*Junior Year*
*Second semester: 15 credits*

MGS 309, 365 and 370, MGT 301, and a professional elective.

*Senior Year*
*First semester: 15 credits*

MGS 366, 475, two professional electives, and a free elective.

*Senior Year*
*Second semester: 15 credits*

MGT 410, an MGS elective, a professional elective, and two free electives.

## Marketing

The Department of Marketing offers a curriculum leading to the Bachelor of Science (B.S.) degree. Career tracks are formed from elective courses for specialization in advertising, retailing, sales management, product management, international marketing, marketing research, and public and non-profit sector marketing. The marketing-textiles option, leading to the Bachelor of Science degree, may also be pursued in the Department of Marketing. This program is offered in conjunction with the Department of Textiles, Clothing, and Related Art. The option is designed to prepare students for managerial positions in the textile industry. The Master of Business Administration (M.B.A.) degree with an opportunity for specialization in marketing is described in the *Graduate School Bulletin.*

*Faculty:* Professor Nason, *chairperson.* Professors Alton, Della Bitta, Hill,

Johnson and Wish; Assistant Professor Lysonski.

A major focus of marketing is the determination of product and service needs of consumers and industries. Marketing research, information systems, and analysis are used in the development and management of products and services as well as the design and execution of communications, pricing, and distribution channels.

*Junior Year*
*First semester: 15 credits*

FIN 301, MGT 301, MKT 301, and two free electives.

*Junior Year*
*Second semester: 15 credits*

MGS 309, MKT 415, one MKT elective, a professional elective, and a free elective.

*Senior Year*
*First semester: 15 credits*

BSL 333, two MKT electives, a professional elective, and a free elective.

*Senior Year*
*Second semester: 15 credits*

MGT 410, MKT 409, two MKT electives, and a professional elective.

**Marketing-Textiles Option**

*Freshman Year*
*First semester: 16 credits*

MGS 101, TXC 103, CHM 103 and 105, an art elective from Group A, and an elective from Group F.

*Freshman Year*
*Second semester: 15 credits*

MGS 102, a speech elective from Group C, one elective each from Groups L, A, and F.

*Sophomore Year*
*First semester: 15 credits*

ACC 201, ECN 125, MGS 201 and 207, and BED 227.

*Sophomore Year*
*Second semester: 16 credits*

ACC 202, ECN 126, MGS 202, CHM 124, TXC 224.

*Junior Year*
*First semester: 15 credits*

FIN 301, MGT 301, MKT 301, TXC 303, and 340 or 440.

*Junior Year*
*Second semester: 15 credits*

MGS 309, MKT 415, TXC 403, a MKT elective, and a free elective.

*Senior Year*
*First semester: 15 credits*

BSL 333, two MKT electives, a TXC elective, and a free elective.

*Senior Year*
*Second semester: 15 credits*

MGT 410, MKT 409, two MKT electives, and TXC 433.

## Production and Operations Management

The Department of Management Science offers a curriculum in production and operations management leading to the Bachelor of Science (B.S.) degree. The Master of Business Administration (M.B.A.) degree with an opportunity for specialization in production and operations management is described in the *Graduate School Bulletin*.

Issues, concepts, and techniques encountered in efficiently managing the modern production function in industry and business are the main concerns of this curriculum. The modern production function is here defined in a wider sense, to include all kinds of operations which employ men and machines to produce visible goods as well as to render intangible services. A basic understanding of the management task of design and evaluation of the possible alternative operations and processes is emphasized. Practice and implications of computer-based systems and operations in management are also investigated.

The operations management major prepares students to become certified production and inventory controllers. Certification examinations are administered by the national Educational Testing Service (ETS) and prepared by practitioners in the American Production and Inventory Control Society. Coursework in the major goes well beyond that necessary for the examinations and should put the students at the forefront of the field.

Among the topics covered in the major are: forecasting, capacity planning, inventory planning, material requirements planning, and operations scheduling and control.

*Junior Year*
*First semester: 15 credits*

FIN 301, MGS 309, MGS 364 or 301 (students electing MGS 301 must complete the sequence MGS 365-366), MKT 301, and a free elective.

*Junior Year*
*Second semester: 15 credits*

MGS 310, 483, MGT 301, a professional elective, and a free elective.

*Senior Year*
*First semester: 15 credits*

BSL 333, MGS 311, 445, MGT 304, and a professional elective.

*Senior Year*
*Second semester: 15 credits*

MGS 458, MGT 410, two professional electives, and a free elective.

## Urban Affairs

The curriculum in urban business is part of the interdisciplinary Urban Affairs Program (see page 12). It provides business students with an understanding of the role of the business enterprise operating in an urban environment. Students who wish to major in this curriculum should consult the business college member of the Urban Affairs Program Coordinating Committee for assistance in formulating their programs of study.

*Junior Year*
*First semester: 15 credits*

FIN 301, MGS 309, MKT 301, MGT 301, and URB 210.

*Junior Year*
*Second semester: 15 credits*

ECN 401, PSC 460, 466, SOC 434, Urban elective.

*Senior Year*
*First semester: 15 credits*

BSL 333, URB 498 or 499, two professional electives, and one free elective.

*Senior Year*
*Second semester: 15 credits*

ECN 402, MGT 410, Urban elective, professional elective, and free elective.

# College of Engineering

James W. Dally, *Dean*
Robert H. Goff, *Associate Dean*

The College of Engineering offers undergraduate curriculums in biomedical electronics, chemical, civil, computer electronics, electrical, industrial, mechanical engineering, chemical and ocean engineering, civil and ocean engineering, mechanical and ocean engineering, and urban engineering. Because the same fundamental concepts underlie all branches of engineering, the freshman year courses are quite similar for all curriculums, and the choice of a specific branch of engineering may be delayed until the beginning of either the second term, or the second year of study. Students electing one of the curriculums that include ocean engineering follow the curriculums for chemical, civil, or mechanical engineering for two or three years and enroll in many ocean engineering courses in the junior and senior year.

All of the engineering curriculums are based on an intense study of mathematics and the basic sciences, and of the engineering sciences common to all branches of the profession. On this base is built the in-depth study of the important principles and concepts of each separate discipline. These principles are applied to the understanding and solution of problems of current interest and importance in the field. Each curriculum is designed to provide the knowledge and ability necessary for practice as a professional engineer, or for successful graduate study, which may include law, business administration or medicine as well as the normal engineering and science disciplines.

The goal of the college is to stimulate the students to become creative, responsible engineers, aware of the social implications of their work, and flexible enough to adjust to the rapid changes taking place in all branches of engineering. Engineers from all fields are heavily involved in the solution of technological and socio-technological problems. The needs of industry are for balanced teams of both men and women from the different engineering areas.

Engineering students, in common with all students in the University, must meet the University's general education requirements listed on page 9 of this catalog. In these courses students are exposed to and challenged by concepts from the humanities and social sciences to insure that the social relevance of their engineering activities will never be forgotten. In selecting courses to satisfy these requirements, students should consult with their advisers to be certain that they have chosen courses which satisfy both the University requirements and the requirements of the Accreditation Board for Engineering and Technology. The requirements in mathematics and natural sciences are satisfied by required courses in the engineering curriculums. Three credits must be taken in the Foreign Language and Culture group, and six credits each in English Communications, Fine Arts & Literature, Social Sciences, and Letters. In two of the latter three groups two-course sequences must be taken. The second course of the two-course sequence may not be at the 100 level, unless it has the first course as a prerequisite or is an obvious continuation of the first.

Entering students who have chosen a specific curriculum should follow the particular program listed below. Those who have decided to major in engineering, but have not selected a specific program, should select courses in general chemistry, general education electives, MTH 141, 142; EGR 102; MCE 162 and/or PHY 213 and 285.

Students who are undecided about engineering, but who wish to keep it open as an option, should take note that MTH 141 and 142, MCE 162 or PHY 213 and 285, and a course in chemistry, are required for graduation from the College of Engineering, and are prerequisites for many engineering courses. They normally must be taken at an early stage, preferably before transferring from University College to the College of Engineering. Students who have not taken them before entering the College of Engineering must confer with an engineering adviser to work out a program for completing all degree requirements. In such cases completion of graduation requirements may take somewhat more than the normal time.

To meet graduation requirements students enrolled in the College of Engineering must satisfactorily complete all courses of the curriculum in which they are registered and must obtain a grade point average of 2.0 or better in all required science, mathematics, and engineering courses (including professional electives).

**Freshman Year.** All engineering curriculums have similar programs during the freshman year. This provides some degree of flexibility to those students who are uncertain about their choice of curriculum. Except for those students enrolled in the Chemical and the Chemical and Ocean curriculums, all engineering students take the following 17-credit program in the first semester.

3 CHM 101 Gen. Chemistry I
1 CHM 102 Lab. for CHM 101
1 EGR 102 Basic Graphics
3 MTH 141 Introd. to Calc. with Anal. Geometry
3 ECN 125 Economic Principles[1]
3 CSC 201 Introd. to Computing[1]
3 General education elective

Students who are still undecided about their choice of curriculum after completing the first semester should review their choice of courses for the second semester with their adviser to be certain that they meet the prerequisites for the sophomore year.

## Biomedical Electronics Engineering

The Bachelor of Science (B.S.) degree in biomedical electronics engineering is offered by the Department of Electrical Engineering. Specialization in biomedical engineering is also available within the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) programs in electrical engineering, described in the *Graduate School Bulletin*.

*Faculty:* Assistant Professor Ohley, *coordinator*. Adjunct Professor Karlson; Adjunct Assistant Professors Cooper, Most, and Williams; electrical engineering faculty.

Biomedical engineers design medical instruments such as electrocardiographs, electroencephalographs, blood analyzers and X-ray machines used for diagnosis of disease, equipment such as radiotherapy machines, pacemakers and lasers for surgery and develop artificial organs. They design computer systems to help physicians monitor critically ill patients, to correlate a multitude of disease symptoms in order to diagnose a disease, and to determine the best course of treatment.

Biomedical engineers are employed in (1) the medical instrument industry, where they design, manufacture, sell and service medical equipment; (2) hospitals, which employ engineers in increasing numbers to select, evaluate and maintain complex medical equipment and to train the hospital staff in their use, and (3) medical and biological research centers, which use the specialized training of the biomedical engineer to apply engineering techniques in research projects.

The biomedical electronics engineering program combines study in the biological sciences with those areas of engineering which are particularly important for the application of modern technology to medicine. With a few minor elective changes the program also satisfies the entrance requirements of most medical schools, but students who plan to go on to medical school should consult the premedical adviser and the coordinator of the biomedical electronics engineering program.

For transfer from the University College to the College of Engineering in the Biomedical Electronics Engineering program students must have completed *all science and mathematics courses required during the first two semesters* (see below) with grade average of C or better.

The concentration requires 138 credits.

*Freshman Year*
*First semester: 17 credits*

3 CHM 101 Gen. Chemistry I
1 CHM 102 Lab. for CHM 101
1 EGR 102 Basic Graphics
3 MTH 141 Introd. to Calculus with Anal. Geometry
3 ECN 125 Economic Principles
3 CSC 201 Introd. to Computing
3 Gen. educ. elective

*Freshman Year*
*Second semester: 18 credits*

4 CHM 124 Organic Chemistry
3 MTH 142 Intermed. Calc. with Anal. Geometry
3 PHY 213 Elementary Physics
1 PHY 285 Lab. for PHY 213
4 ZOO 111 Gen. Zoology
3 Gen. educ. elective

*Sophomore Year*
*First semester: 16 credits*

3 ELE 209 Concepts in Elec. Engineering
3 ELE 210 Introd. to Elec. & Magnetism
1 ELE 214 Lab. for ELE 210
3 MTH 243 Calc. & Anal. Geometry
3 ZOO 345 Basic Animal Physiology
3 Gen. educ. elective

*Sophomore Year*
*Second semester: 18 credits*

3 ELE 205 Microprocessor Lab.
3 ELE 211 Linear Syst. & Circuit Theory I
3 MCE 263 Dynamics
3 MTH 362 Adv. Engineering Math I
3 PHY 223 Introd. to Acoustics & Optics
3 Gen. educ. elective

*Junior Year*
*First semester: 19 credits*

4 ELE 312 Linear Syst. & Circuit Theory II
3 ELE 322 Electromagnetic Fields I
3 MTH 363 Adv. Engineering Math II
3 PHY 341 Introd. to Modern Physics
6 Gen. educ. electives

*Junior Year*
*Second semester: 16 credits*

3 ELE 313 Linear Systems
3 ELE 323 Electromagnetic Fields II
4 ELE 342 Electronics I
3 PHY 420 Introd. to Thermodynamics & Stat. Mechanics (preferred), **or** MCE 341 Fundamentals of Thermodynamics
3 Gen. educ. elective

*Senior Year*
*First semester: 18 credits*

5 ELE 443 Electronics II
3 ELE 586 Biomedical Electronics I **or** ELE 588 Biomedical Engineering I

[1]Either or both of these courses may be taken during the second semester of the freshman year. Students who do so should replace them in the first semester with electives from the second semester of their program.

1 ELE 481 Biomedical Engineering Seminar
3 Gen. educ. elective
3 Math elective
3 Professional elective

*Senior Year*
*Second semester: 16 credits*

3 ELE 587 Biomedical Electronics II **or** ELE 589 Biomedical Engineering II
1 ELE 482 Biomedical Engineering Seminar
3 ZOO 442 Mammalian Physiology
6 Professional electives
3 Free elective

## Chemical Engineering

The Department of Chemical Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in chemical engineering and in cooperation with the Department of Ocean Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in chemical and ocean engineering. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees also offered by the department are described in the *Graduate School Bulletin*.

*Faculty:* Professor Estrin, *chairperson*. Professors Barnett, Shilling and Votta; Associate Professors Knickle, Rockett and Rose; Assistant Professors Brown, Bryers and Gray; Adjunct Associate Professor DiMeglio; Adjunct Assistant Professor Sahagian.

The chemical engineer is concerned with the application and control of processes leading to changes in composition. These may be chemical and physical processes, and *control* refers to achieving the desired goal at reasonable cost. The processes are most frequently associated with the production of useful products (chemicals, fuels, metals, foods, pharmaceuticals, paper, plastics, and the like), but also include such seemingly unrelated matters as removal of toxic components from the blood by an artificial kidney, and modeling the flow of exhaust gases from automobiles on the highway (turbulent diffusion and heat transfer coupled with chemical change). The chemical engineer's domain includes more efficient production and use of energy, processing of wastes, and protection of the environment.

Chemical engineers have a strong foundation in chemistry, physics, mathematics and basic engineering. Chemical engineering courses include the use of digital computers, thermodynamics, transport phenomena, mass transfer operations, metallurgy, materials engineering, process dynamics and control, kinetics, and plant design. The student has the opportunity to operate small-scale equipment to determine efficiencies and operating characteristics, and to visit chemical plants in the area. Intensive work in the solution of complex problems is given in which economics and optimization of engineering design are emphasized.

A chemical engineer with a background in both chemistry and engineering can apply his knowledge of research and development, design, production, and manufacturing not only to the areas listed earlier, but to many others such as textiles, dyes, petroleum, ceramics, paint, and rubber, as well as to biomedical, biochemical, ocean, space, nuclear energy, and environmental problems and processes.

The senior year curriculum for students concentrating in chemical and ocean engineering is listed under Ocean Engineering, page 61.

Programs can be designed for those interested in special areas such as material sciences, biochemical engineering, and pollution control, in general chemical engineering. Programs for those interested in entering dental and medical schools, or schools of business administration, can also be constructed, sometimes requiring a few courses beyond the 130 regular credits.

The concentration requires 130 credits.

*Freshman Year*
*First semester: 15 credits*

5 CHM 191 Gen. Chemistry[2]
1 EGR 102 Basic Graphics
3 MTH 141 Introd. Calc. with Anal. Geometry
6 Gen. educ. electives[3]

*Freshman Year*
*Second semester: 15 credits*

5 CHM 192 Gen. Chemistry[2]
3 MTH 142 Intermed. Calc. with Anal. Geometry
4 PHY 213 Elem. Physics and PHY 285 Physics Lab
3 ECN 123 Elements of Economics

*Sophomore Year*
*First semester: 17 credits*

3 CHE 212 Chemical Process Calculations
4 CHM 291 Organic Chemistry
3 MTH 243 Calc. and Anal. Geometry of Several Variables
4 PHY 214 Elem. Physics and PHY 286 Physics Lab.
3 Gen. educ. elective[3]

*Sophomore Year*
*Second semester: 16 credits*

3 CHE 272 Introd. to Chemical Engineering
3 CHE 332 Physical Metallurgy **or** approved professional elective[3]
4 CHM 292 Organic Chemistry
3 ELE 220 Elec. Circuits, Measurements, and Electronics
3 Approved biological science elective[3]

*Junior Year*
*First semester: 17 credits*

3 CHE 313 Chem. Engineering Thermodynamics
3 CHE 347 Transfer Operations I
2 CHM 335 Phys. Chemistry Lab.
3 CHM 431 Physical Chemistry
3 MTH 244 Differential Equations **or** approved mathematics elective[3]
3 Gen. educ. elective[3]

*Junior Year*
*Second semester: 16 credits*

3 CHE 314 Chem. Engineering Thermodynamics
1 CHE 322 Chem. Process Analysis
3 CHE 348 Transfer Operations II
3 CHE 425 Process Dynamics and Control
3 CHM 432 Physical Chemistry
3 Gen. educ. elective[3]

*Senior Year*
*First semester: 17 credits*

1 CHE 328 Industrial Plants

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[2]For CHM 191 and 192 (10 credits), students may substitute CHM 101, 102, 112, 114, and 212 (12 credits).

[3]In order to meet accreditation requirements, these courses, together with at least 18 credits of the general education electives, must be chosen from a group approved by the department, with the approval of the adviser designated by the department.

2 CHE 345 Chem. Engineering Lab.
2 CHE 349 Transfer Operations III
3 CHE 351 Plant Design and Economics
3 CHE 464 Industrial Reaction Kinetics
3 NUE 581 Introd. to Nuclear Engineering, **or** PHY 341 Introd. Modern Physics
3 Gen. educ. elective[3]

*Senior Year*
*Second semester: 17 credits*

2 CHE 346 Chem. Engineering Lab.
3 CHE 352 Plant Design and Economics
3 Approved professional elective[3]
3 CVE 220 Mechanics of Materials **or** approved professional elective[3]
6 Gen. educ. electives[3]

## Civil and Environmental Engineering

The Department of Civil and Environmental Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in civil and environmental engineering and, in cooperation with the Department of Ocean Engineering, a curriculum leading to the Bachelor of Science (B.S.) degree in Civil and Ocean Engineering. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees, also offered by the department, are described in the *Graduate School Bulletin*.

*Faculty:* Professor Kelly, *chairman*. Professors Nacci, Poon and Silva; Associate Professors Fang, Marcus, McEwen, Sussman and Urish; Assistant Professors Al-Kazily and Wright.

Civil engineers are responsible for researching, developing, planning, designing, constructing, and managing many of the complex systems and facilities which are essential to our modern civilization. These include: water supply and pollution control systems; all types of transportation systems from pipelines to city streets; structural systems from residential buildings to city skyscrapers, power plants, and offshore platforms. Civil and environmental engineers play important roles in planning and administration with government agencies at all levels, especially those dealing with public works, transportation, environmental control, water supply, and energy.

The curriculum provides the students with sufficient background to pursue graduate study or to enter directly into professional practice in industry or government after graduation. The first two years are devoted largely to courses in mathematics, chemistry, physics, and engineering science which are common to all engineering curriculums. In their last two years students have a large degree of flexibility in developing their own programs to meet their own professional goals through the selection of professional electives in environmental engineering, soil mechanics and foundations, structural engineering, and transportation and construction.

No later than the first midsemester of the junior year each student is required to file a proposed plan of study which has been approved by the faculty adviser and the department. Professional electives and general education electives must be selected in consultation with the adviser to satisfy the Accreditation Board for Engineering and Technology accreditation requirements.

The junior and senior year curriculum for students concentrating in civil and ocean engineering is listed under Ocean Engineering, page 61.

Total credits required: 131.

*Freshman year*
*First semester: 17 credits*

3 CHM 101 Gen. Chemistry
1 CHM 102 Chemistry Lab.
1 EGR 102 Basic Graphics
3 MTH 141 Introd. Calc. with Anal. Geometry
3 CSC 201 Introd. to Computing I
3 ECN 125 Economic Principles
3 Gen. educ. elective

*Freshman Year*
*Second semester: 17 credits*

3 MTH 142 Intermed. Calc. with Anal. Geometry
3 MCE 162 Statics
3 PHY 213 Elementary Physics
1 PHY 285 Physics Lab.
3 GEL 105 Geological Earth Sciences
1 GEL 106 Geology Lab.
3 Gen. educ. elective

*Sophomore Year*
*First semester: 16 credits*

3 MTH 243 Calc. and Anal. Geometry
3 MCE 263 Dynamics
3 PHY 214 Elementary Physics
1 PHY 286 Physics Lab.
3 CVE 216 Metronics
3 Gen. educ. elective

*Sophomore Year*
*Second semester: 15 credits*

3 MTH 244 Differential Equations
3 CVE 220 Mechanics of Materials
3 ELE 220 Elec. Circuit, Measurements and Electronics
6 Gen. educ. electives

*Junior Year*
*First semester: 17 credits*

2 CVE 322 Civil Eng. Lab.[4]
3 MCE 354 Fluid Mechanics
3 CVE 352 Structural Anal. and Design I
3 CVE 374 Environmental Eng. II
3 Professional elective
3 Free elective
0 CVE 303 Introd. to Professional Practice

*Junior Year*
*Second semester: 16 credits*

4 CVE 381 Soil Mechanics
3 CVE 347 Highway Engineering
3 CVE 353 Structural Anal. and Design II
3 CVE 396 Civil Eng. Analysis[5] **or** prof. elective
3 Gen. educ. elective
0 CVE 304 Introd. to Professional Practice

*Senior Year*
*First semester: 18 credits*

3 Math science elective[6]
3 Approved science elective[7]
3 CVE 495 Civil Eng. Systems[5] **or** prof. elective
6 Professional electives
3 Gen. educ. elective

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[3]In order to meet accreditation requirements, these courses, together with at least 18 credits of the general education electives, must be chosen from a group approved by the department, with the approval of the adviser designated by the department.

[4]Students can take the lab in either the fall or spring semester.

[5]Students are required to take either CVE 396 or 495.

[6]400 level or above course in mathematics, statistics, or operation research.

[7]Any course for which the prerequisite is met by CHM 101, GEL 103, or PHY 214 or any course in biochemistry and biophysics, biology, botany, microbiology, or zoology.

0 CVE 305 Introd. to Professional Practice

*Senior Year*
*Second semester: 15 credits*

9 Professional electives
3 Gen. educ. elective
3 Free elective
0 CVE 306 Introd. to Professional Practice

*Professional electives.* Each student in consultation with his or her adviser selects at least 21 credits of approved courses in engineering and other areas appropriate to a program in Civil and Environmental Engineering.

## Computer Electronics Engineering

The Bachelor of Science (B.S.) degree in computer electronics engineering is offered by the Department of Electrical Engineering. Specialization in computer engineering is also available within the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) programs in electrical engineering, described in the *Graduate School Bulletin*.

*Faculty:* Professors Jackson and Tufts, coordinators. Electrical engineering faculty.

Computers and computer-like devices have truly transformed society, particularly in the technologically advanced countries. Computers are everywhere, and all indications are that computers and computer components (digital devices) will be even more pervasive five or ten years from now. Computer engineering is concerned with the design and efficient use of large or small computers and the development of other machines and instruments which contain computers, or parts of computers, as essential building blocks, from the hand-held calculator to the large multi-terminal computer, and the programmable assembly machine. A programmable machine is one which will change its operation in response to a program or command.

Computer engineers may be employed in the design or planning, service, operation, and sale of computer systems as well as the design, service, and sale of complex machinery, instruments, and systems — such as an automated subway — which require computers as essential parts. The employers may be industrial organizations, transportation companies, federal laboratories, or local government.

The computer engineer must understand the fundamentals of computer logic and programming as well as the fundamentals of electronics and general engineering —mathematics, mechanics, electricity, magnetism, and heat transfer. Engineers use all of this knowledge to create new devices and systems which satisfy perceived human needs.

For transfer from the University College to the College of Engineering in the Computer Engineering program students must have completed *all science and mathematics courses required during the first two semesters* (see below) with a grade average of C or better.

The concentration requires 129 credits.

*Freshman Year*
*First semester: 17 credits*

3 CSC 201 Introd. to Computing I
3 CHM 101 Gen. Chem. Lecture I
1 CHM 102 Lab. for Chemistry I
3 MTH 141 Introd. Calc. with Anal. Geometry
3 ECN 125 Economic Principles
1 EGR 102 Basic Graphics
3 Elective

*Freshman Year*
*Second semester: 16 credits*

3 PHY 213 Elem. Physics I
1 PHY 285 Lab. for Physics I
3 MTH 142 Intermed. Calc. with Anal. Geometry
3 CSC 202 Introd. to Computing II
6 Electives

*Sophomore Year*
*First semester: 16 credits*

3 ELE 209 Concepts in Elec. Engineering
3 ELE 210 Introd. to Elec. and Magnetism
1 ELE 214 Introd. Elec. Engineering Lab.
3 MTH 243 Calculus and Anal. Geometry
6 Electives

*Sophomore Year*
*Second semester: 15 credits*

3 ELE 205 Microprocessor Lab.
3 ELE 211 Linear Syst. & Circuit Theory I
3 MTH 362 Adv. Engr. Math. I
3 PHY 341 Modern Physics I
3 CSC 311 Machine & Assem. Lang. Programming

*Junior Year*
*First semester: 16 credits*

4 ELE 312 Linear Syst. & Circuit Theory II
3 ELE 322 Electromag. Fields I
3 ELE 331 Elec. Engr. Materials
3 MTH 363 Adv. Engineering Math. II
3 Elective

*Junior Year*
*Second semester: 16 credits*

3 ELE 313 Linear Systems
4 ELE 342 Electronics I
9 Electives

*Senior Year*
*First semester: 17 credits*

5 ELE 443 Electronics II
6 Professional electives
3 IDE 411 Engr. Statistics I
3 MTH elective

*Senior Year*
*Second semester: 16 credits*

3 ELE 405 Digital Computer Design
4 ELE 444 Electronics III
3 Professional elective
6 Electives

Senior year professional electives for the first semester are ELE 505 or 508 or 581 or 501, CSC 411 or 413, MCE 341; for the second semester ELE 436 or 506 or 509, CSC 411 or 412, MCE 341 or PHY 420. Mathematics electives are MTH 215 or 451 or 471 or 472.

For requirements in Humanities and Social Sciences see "Minimum Requirements" under Electrical Engineering on page 58. In addition the electronic computer engineering program has 6 credits of free electives.

## Electrical Engineering

The Department of Electrical Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees also offered by the department are described in the *Graduate School Bulletin*.

*Faculty:* Professor Jackson, *chairperson.* Professors Birk, Haas, Kelley, Lengyel, Lindgren, Mardix, Mitra, Polk, Poularikas, Sadasiv, Spence and Tufts; Associate Professors Daly and Prince; Assistant Professors Kay and Ohley; Adjunct Professors Biberman, Karlson, Hall and D. Middleton; Adjunct Associate Professor Banerjee; Adjunct Assistant Professors Cooper, McCollough, Most and Williams.

Electrical engineers work in all areas in which electrical phenomena are involved. These areas include communication systems, computers, control systems, quantum electronics and electro-optics, electro-acoustics, energy conversion, antennas and radio propagation, design of electronic devices, and bioengineering.

Since electrical instrumentation is at the heart of modern science and technology, electrical engineers are not only employed in the computer, electronics, communications, and power industries, but may also be found in such diverse enterprises as transportation, the chemical industry, large hospitals, medical schools, and government laboratories. By carefully selecting elective courses, the student should be able to enter any of these fields after graduation or be prepared for graduate study in engineering or physics.

The curriculum emphasizes the scientific basis of electrical engineering and the application of mathematical analysis to engineering problems. Work is required in network and systems theory, atomic physics and the behavior of the solid state, electromagnetic theory, and electronics. Creative use of scientific principles in problems of engineering design is stressed particularly in the senior year. Digital computer techniques are a part of many electrical engineering courses.

Extensive laboratory work with electrical and optical devices serves to bridge the gap between mathematical analysis and the real world of "hardware." Separate undergraduate laboratories are available for electrical measurements, electronics, pulse and digital circuits, microprocessors, computer graphics, microwaves and quantum electronics, optics, materials, energy conversion, and systems. Selected students participate in advanced projects including microelectronics, investigation of optical properties of solids, optical and radio propagation, acoustics, computers, robotics, and biological instrumentation.

Electrical engineering students should note that the four-year electrical engineering curriculum allows for three credits of completely free electives which do not have to satisfy any of the general education requirements. Although the natural science requirement will be satisfied automatically by courses specified in the electrical engineering curriculum, it is recommended that students take some additional courses in mathematics or physics for which prerequisites have been satisfied.

For transfer from the University College to the College of Engineering in the Electrical Engineering program, students must have completed *all science and mathematics courses required during the first two semesters* (see below) with a grade average of C or better.

**Minimum Requirements**

*Humanities, and Social Sciences.* (27 credits) The student will satisfy the University's general education requirement as well as meet the requirements of the Accrediting Board for Engineering and Technology by completing 6 credits in Fine Arts and Literature, 6 credits in English Communication, 6 credits in Social Sciences, 6 credits in Letters, and 3 credits in Foreign Culture. In two of the three specific groups — Fine Arts and Literature, Social Sciences, and Letters — both courses chosen must be in the same area of concentration and must be selected from a list provided by the Electrical Engineering Department. ECN 125 required in the freshman year may be included as one of the social sciences.

*Mathematics.* (18 credits) MTH 141, 142, 243, 362, 363; 3 cr. MTH elective (200 level or higher).

*Basic Sciences.* (20 credits) CHM 101/102; basic science elective (any course in CHM, BIO, GEL, ESC, PHY or ZOO approved by the department), PHY 213, 285, 223, 341, thermodynamics (PHY 420 or MCE 341).

*Computer Science.* (3 credits) CSC 201.

*Engineering Sciences and Design.* (53 credits) MCE 263; ELE 205, 209, 210, 214, 211, 312, 313, 322, 323, 331, 342, 443; two electrical engineering electives, one electrical engineering lab course, engineering elective (non-electrical).

*Professional Elective.* (3 credits)

*Other Engineering Courses.* (1 credit) EGR 102.

*Free Elective.* (3 credits)

The concentration requires 128 credits.

*Freshman Year*
*First semester: 17 credits*

4 CHM 101 Gen. Chemistry I and CHM 102 Lab.
1 EGR 102 Basic Graphics
3 MTH 141 Introd. Calc. with Anal. Geometry
3 ECN 125 Economic Principles
3 CSC 201 Introd. to Computing
3 One gen. educ. elective

*Freshman Year*
*Second semester: 16 credits*

3 Basic science elective[8]
3 MTH 142 Intermed. Calc. with Anal. Geometry
4 PHY 213 Elem. Physics I and 285 Physics Lab.
6 Two gen. educ. electives

*Sophomore Year*
*First semester: 16 credits*

3 MTH 243 Calc. and Anal. Geom. of Several Variables
3 ELE 210 Introd. to Electr. and Magnetism
3 PHY 223 Introd. to Acoustics and Optics
3 ELE 209 Concepts in Elec. Engineering
1 ELE 214 Introd. EE Lab.
3 One gen. educ. elective

*Sophomore Year*
*Second semester: 15 credits*

3 MTH 362 Adv. Engr. Mathematics I
3 PHY 341 Modern Physics
3 ELE 211 Linear Syst. & Circuit Theory
3 ELE 205 Microprocessor Lab.
3 MCE 263 Dynamics

[8]Must be approved by department adviser.

*Junior Year*
*First semester: 16 credits*

3 MTH 363 Adv. Engr. Mathematics II
4 ELE 312 Linear Syst. & Circuit Theory
3 ELE 322 Electromagnetic Fields I
3 ELE 331 Elec. Engr. Materials I
3 One gen. educ. elective

*Junior Year*
*Second semester: 16 credits*

3 PHY 420 Introd. to Thermodynamics **or** MCE 341 Thermodynamics
3 ELE 313 Linear Systems II
3 ELE 323 Electromagnetic Fields II
4 ELE 342 Electronics I
3 One gen. educ. elective

*Senior Year*[9]
*Total credits for 2 semesters: 32*

5 ELE 443 Electronics II
6 Two ELE electives
3 Electrical Lab. course
3 Professional elective
3 Engineering elective
3 Mathematics elective (200 level or above)
6 Two gen. educ. electives
3 Free elective

Cooperative work in industry carrying academic credit (ELE 495, 496) is available for a few particularly talented and motivated students who are willing to devote more than average effort to their studies and who are capable of much better than average performance.

The Department of Electrical Engineering offers a five-year B.S.-M.S. cooperative program. Academic course work is alternated between periods of engineering practice at companies or government laboratories selected by the department.

A total of 14 months of industrial experience is obtained in three segments: (1) 3 months, summer between sophomore and junior year; (2) 3 months, summer between junior and senior year: ELE 495 (3 credits); (3) 8 months, second semester of senior year plus the following summer: ELE 496 (6 credits).

The three assignments are usually, but not necessarily, taken at the same company. The industrial experience grows in technical complexity as the student progresses through the program, with the first industrial experience having a small technical content and the eight-month period at the end of the senior year being a junior engineering position. The student earns credit toward his or her degree for the work done and experience gained during the second and third assignments.

Students interested in this program should contact Dr. J. C. Daly, the department's cooperative work coordinator.

## Industrial Engineering

The Department of Industrial Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree. The Master of Science (M.S.) degree also offered by the department is described in the *Graduate School Bulletin*.

*Faculty:* Professor C. F. James, *chairperson*. Professor Nichols; Associate Professors Lawing and Shao; Assistant Professor Odrey and Garber.

The industrial engineering curriculum is designed to provide significant strength in mathematics, basic science, and engineering science, plus a carefully coordinated set of courses of particular importance to the professional industrial engineer. Mathematical modeling of physical systems, optimization, probability and random variables, production systems, manufacturing engineering, computer aided manufacturing, and metrology are areas that receive considerable attention. The professional portion of the curriculum is augmented with computer science and professional electives. Computer applications are required throughout the curriculum.

Upon completion, the student will be amply prepared to pursue a career in the many engineering opportunities in industry, transportation, government, hospitals, and service organizations. The curriculum also provides an excellent background for further formal study in industrial engineering or related fields of engineering and physical science.

By using the professional and free electives for certain courses, the student can complete a Bachelor of Science degree in industrial engineering plus a Master of Business Administration degree within five years. See the department advisers for further details.

The concentration requires 128-132 credits.

*Freshman Year*
*First semester: 14-15 credits*

4 CHM 101 Gen. Chem. Lecture **and** CHM 102 Lab. **or**
5 CHM 191 Gen. Chemistry
1 EGR 102 Basic Graphics
3 MTH 141 Introd. Calc. with Anal. Geometry
6 Gen. educ. electives

*Freshman Year*
*Second semester: 15-18 credits*

3-5 Natural science elective
3 MTH 142 Intermed. Calc. with Anal. Geometry
3 MCE 162 Statics **or**
4 PHY 213 Elem. Physics, **and** PHY 285 Lab.
6 Gen. educ. electives

*Sophomore Year*
*First semester: 17 credits*

4 IDE 220 Introd. to Industrial Engineering I
3 MTH 243 Calc. and Anal. Geometry of Sev. Variables
3 MCE 263 Dynamics
4 PHY 214 Elem. Physics **and** PHY 286 Lab.
3 CSC 201 Introd. to Computing

*Sophomore Year*
*Second semester: 16 credits*

4 IDE 221 Introd. to Industrial Engineering II
3 MTH Algebraic Structures
3 CVE 220 Mechanics of Materials
3 PHY 223 Acoustics & Optics
3 ELE 220 Circuits, Measurements, and Electronics

*Junior Year*
*First semester: 15 credits*

3 IDE 411 Engr. Statistics I
3 IDE 432 Operations Research I
3 MCE 341 Thermodynamics
3 CHE 333 Engr. Materials **or** CHE 437 Materials Engr.
3 MTH 361 Math. Methods for Science and Engr.

*Junior Year*
*Second semester: 18 credits*

3 IDE 412 Engr. Statistics II
3 IDE 433 Operations Research II

[9]See your adviser for help in the preparation of suitable senior year programs.

3 MCE 354 Fluid Mechanics
3 IDE 440 Materials Processing and Metrology
3 ECN 125 Econ. Principles I[10]
3 ACC 201 Elem. Accounting

*Senior Year*
*First semester: 18 credits*

3 IDE 350 Industr. Engr. Systems Design I
3 Professional elective
3 Free elective
3 PHY 340 Introd. to Modern Physics or PHY 341 Modern Physics I
3 Quant. or Matls. Elective[11]
3 ECN 126 Econ. Principles II

*Senior Year*
*Second semester: 15 credits*

3 IDE 351 Industrial Engr. Systems Design II
3 Professional elective
3 Free elective
6 Gen. educ. electives

General education indicated in several places above refers to one of the electives in the University's general education program, required in all curriculums leading to a bachelor's degree.

## Mechanical Engineering and Applied Mechanics

The Department of Mechanical Engineering and Applied Mechanics offers a curriculum leading to the Bachelor of Science (B.S.) degree in mechanical engineering and, in cooperation with the Department of Ocean Engineering, offers a curriculum leading to the Bachelor of Science (B.S.) degree in mechanical and ocean engineering. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees also offered by the department are described in the *Graduate School Bulletin*.

*Faculty:* Professor Kim, *chairperson.* Professors G. Brown, Dally, DeLuise, Dowdell, Ferrante, Hagist, Hatch, Nash, Schenck, Test, M. Wilson and F. White; Associate Professors Datseris, Ghonem, Goff, Lessmann, Palm and Sadd; Assistant Professors Halliday, Henderson and Shukla; Instructor Das; Adjunct Assistant Professors Dunlap, Messier and Patton.

This curriculum provides a thorough and well-rounded foundation in basic science, mathematics, engineering science, and general education to prepare the graduate to enter a professional engineering career. The curriculum is also excellent preparation for graduate school. Mechanical engineers are employed in large numbers in every industry where they frequently assume positions of leadership. The program at the University of Rhode Island is unusually strong in providing a background in systems engineering, design, fluids, and the thermal sciences including energy and energy transfer. Computer applications are stressed throughout the curriculum. All undergraduates are invited to join the Student Section of the American Society of Mechanical Engineers which sponsors industrial plant visits, special lectures, and other activities.

The work in the first two years consists of basic courses in science (mathematics, physics, chemistry), applied science (mechanics, electricity and magnetism, computer science, theory of mechanisms), and general education (humanities, social sciences, communication).

The junior year concentrates on fundamental courses in mechanical engineering (thermodynamics, fluid mechanics, systems engineering, engineering analysis), materials science, engineering economy, and electronic devices. Further general education studies are also covered.

The senior year in mechanical engineering includes machine design, heat transfer, manufacturing processes, and a wide variety of professional electives such as mechanical control systems, advanced fluid mechanics, advanced mechanics of materials, dynamics of machines, internal combustion engines, alternate energy systems including solar and wind energy, power plants, lubrication and bearings, thermal environmental engineering, and vibrations.

Throughout the program the student takes an integrated series of laboratory courses which introduce laboratory techniques and provide practical experience with the physical and engineering phenomena being covered in concurrent courses. Digital computer techniques are included. The Academic Computer Center's Itel AS/5 Digital Computer is used. Students also use the department's microcomputer and computer graphics facilities.

To receive the Bachelor of Science degree in mechanical engineering, the student must satisfactorily complete all the courses in the following curriculum, although the sequence may be changed. The curriculum shown below is for the class of 1985 and subsequent classes. Students in the classes of 1982-1984 should obtain a check sheet from their advisers.

The concentration for the classes of 1985 and subsequent classes requires 133 credits.

Those students desiring an undergraduate specialization in ocean engineering may choose the program in mechanical and ocean engineering. Students enrolled in mechanical and ocean engineering must follow the program of study of mechanical engineering during the freshman and sophomore years. The junior and senior years' curriculum for this major is listed under Ocean Engineering.

This curriculum totals 133 credits.

*Freshman Year*
*First semester: 17 credits*

4 CHM 101 Gen. Chemistry I and CHM 102 Lab.
1 EGR 102 Basic Graphics
3 MTH 141 Introd. Calc. with Anal. Geometry
3 ECN 125 Economic Principles
3 CSC 201 Introd. to Computing
3 Gen. educ. elective

*Freshman Year*
*Second semester: 16 credits*

3 MTH 142 Intermed. Calc. with Anal. Geometry
3 MCE 162 Statics
4 PHY 213, 285 Elem. Physics
6 Gen. educ. electives

*Sophomore Year*
*First semester: 16 credits*

3 CVE 220 Mechanics of Materials

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[10]ECN 123 is acceptable as a substitute for ECN 125 and as a prerequisite for ECN 126; however, ECN 125 is recommended and preferred for this curriculum.

[11]One course must be selected from the following list of courses: IDE 500, 513, 517, 525, 533, 535, 540, 541, 550, 555, 570; MTH 335, 362, or any 400-level Math course except MTH 451, 452, 456; or ELE 331, 582, OCE 534, CHE 532, 533, 537, 539, 573, MCE 426, 550, PHY 455.

3 MTH 243 Calc. and Anal. Geometry of Several Variables
3 MCE 263 Dynamics
4 PHY 214, 286 Elem. Physics
3 Gen. educ. elective

*Sophomore Year*
*Second semester: 18 credits*

3 ELE 220 Elec. Circuits, Measurem. and Electronics
3 MTH 244 Differential Equations
3 MCE 324 Kinematics
3 PHY 341 Modern Physics
6 Gen. educ. electives

*Junior Year*
*First semester: 15 credits*

3 CHE 333 Engr. Materials
3 ELE 221 Electronic Instrum. and Electromech. Devices
3 MCE 341 Fundamentals of Thermodynamics
3 MCE 372 Engr. Analysis I
3 Gen. educ. elective

*Junior Year*
*Second semester: 18 credits*

3 IDE 404 Engineering Economy
3 MCE 317 Mechanical Engr. Exp. I
3 MCE 342 Mechanical Engr. Thermodynamics
3 MCE 354 Fluid Mechanics
3 MCE 366 Introd. to Systems Engineering
3 MCE 373 Engr. Analysis II

*Senior Year*
*First semester: 18 credits*

3 IDE 440 Manufacturing Processes
3 MCE 318 Mechanical Engr. Exp. II
3 MCE 423 Design of Machine Elements
3 MCE 448 Heat and Mass Transfer
6 Professional electives[12]

*Senior Year*
*Second semester: 15 credits*

3 MCE 429 Comprehensive Design
6 Professional electives[12]
3 Free elective
3 Gen. educ. elective

## Ocean Engineering

The Department of Chemical Engineering, the Department of Civil and Environmental Engineering, and the Department of Mechanical Engineering and Applied Mechanics offer curriculums leading to the Bachelor of Science (B.S.) degree in chemical and ocean engineering, civil and ocean engineering, or mechanical and ocean engineering in cooperation with the graduate Department of Ocean Engineering. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in ocean engineering are described in the *Graduate School Bulletin*.

*Faculty:* Professor Middleton, *chairperson*. Professors Haas, Kowalski, LeBlanc, Nacci, Silva and White; Associate Professors Heidersbach, Rose, Spaulding and Stepanishen; Adjunct Professors Moffett and Sherman; Emeritus Professor Sheets.

**Chemical and Ocean Engineering.** Students enrolled in this curriculum will follow the program of study for chemical engineering (page 55) during the freshman, sophomore, and junior years.

The concentration requires 132 credits.

*Senior Year*
*First semester: 18 credits*

1 CHE 328 Industrial Plants
2 CHE 349 Transfer Operations III
3 CHE 351 Plant Design and Economics[13]
3 CHE 403 Introd. to Ocean Engr. Processes I
3 CHE 464 Industr. Reaction Kinetics
3 CHE 534 Corrosion and Corrosion Control
3 Gen. educ. elective[14]

*Senior Year*
*Second semester: 18 credits*

3 CHE 352 Plant Design and Economics[13]
3 CHE 404 Introd. to Ocean Engr. Processes II
3 OCG 401 Gen. Oceanography
3 OCE 410 Basic Ocean Measurements
6 Gen. educ. electives[14]

**Civil and Ocean Engineering.** Students enrolled in this curriculum will follow the program of study for civil and environmental engineering (page 56) during the freshman and sophomore years.

The curriculum requires 132 credits.

*Junior Year*
*First semester: 17 credits*

2 CVE 322 Civil Engineering Lab.[15]
3 MCE 354 Fluid Mechanics
3 CVE 352 Structural Analysis and Design I
3 CVE 374 Environmental Eng. I
3 OCG 401 General Oceanography
3 Free elective
0 CVE 303 Introd. to Professional Practice

*Junior Year*
*Second semester: 16 credits*

4 CVE 381 Soil Mechanics
3 CVE 347 Highway Engineering
3 CVE 353 Structural Analysis and Design II
3 CVE/OCE 406 Introd. to Ocean and Coastal Eng.
3 Gen. educ. elective
0 CVE 304 Introd. to Professional Practice

*Senior Year*
*First semester: 19 credits*

3 Math science elective[15]
3 CVE 495 Civil Eng. Systems[16] **or** prof. elective
6 Professional electives
3 CVE/OCE 411 Basic Coastal Measurements
3 Gen. educ. elective
1 CVE 491 Special Problems: Project in Civil and Ocean Eng.
0 CVE 305 Introd. to Professional Practice

*Senior Year*
*Second semester: 15 credits*

3 CVE/OCE 407 Project in Ocean Engineering

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[12]The requirement for professional electives must be satisfied by a minimum of two three-credit elective courses in mechanical engineering and the remainder must be 300-, 400-, or 500-level courses offered by the College of Engineering, or by the mathematics, computer science, chemistry, or physics departments. Elective choices made by a student must be approved by the adviser.

[13]CHE 351, 352 will include applications to ocean engineering problems for students selecting the chemical and ocean engineering program.

[14]At least 18 credits of the General Education electives must be chosen from a group approved by the department, with the approval of the adviser designated by the department.

[15]Students can take the lab in either the fall or spring semester.

[16]400-level, or above, course in mathematics, statistics, or operations research.

3 Ocean-related prof. elective
3 CVE 396 Civil Eng. Systems[17] or prof. elective
3 Gen. educ. elective
3 Free elective
0 CVE 306 Introd. to Professional Practice

**Mechanical and Ocean Engineering.** Student enrolled in this curriculum will follow the program of study for mechanical engineering and applied mechanics during the freshman and sophomore years. This curriculum requires 133 credits. The junior and senior years for the class of 1985 and subsequent classes are shown below.

*Junior Year*
*First semester: 15 credits*

3 CHE 333 Engr. Materials
3 ELE 221 Electronic Instrum. and Electromech. Devices
3 MCE 341 Fundamentals of Thermodynamics
3 MCE 372 Engr. Analysis I
3 OCG 401 General Oceanography

*Junior Year*
*Second semester: 18 credits*

3 IDE 404 Engineering Economy
3 MCE 317 Mechanical Engr. Exp. I
3 MCE 342 Mechanical Engr. Thermodynamics
3 MCE 354 Fluid Mechanics
3 MCE 366 Introd. to Systems Engineering
3 MCE 373 Engr. Analysis II

*Senior Year*
*First semester: 18 credits*

3 MCE 401 Introd. to Ocean Engr. Systems I
3 MCE 423 Design of Machine Elements
3 MCE 448 Heat and Mass Transfer
3 OCE 410 Basic Ocean Measurements
3 PHY 425 Acoustics
3 Ocean-related elective

*Senior Year*
*Second semester: 15 credits*

3 MCE 402 Introd. to Ocean Engr. Systems II
3 Ocean-related elective
3 Free elective
6 Gen. educ. electives

## Urban Affairs

The curriculum in urban engineering is part of the interdisciplinary Urban Affairs Program (see page 12). It is designed to prepare students for systems-oriented activities in the analysis and solution of urban problems. Beginning with core work in mathematics, physics, chemistry and zoology, the curriculum includes computer science, ecology systems engineering, and operations research, as well as work in the social sciences and humanities which provide a general understanding of contemporary urban society. The curriculum includes a summer internship at the end of the junior year and a senior seminar which brings together students in urban affairs concentrations from all parts of the University.

Students who wish to major in this curriculum should consult the appropriate member of the urban Affairs Program Coordinating Committee for assistance in the formulation and approval of their curriculums.

The concentration requires 126 credits.

*Freshman Year*
*First semester: 14 credits*

3 CHM 103 Introd. Chemistry
1 CHM 105 Chemistry Lab.
3 ECN 123 Elements of Economics
1 EGR 102 Graphics
3 MTH 141 Introd. Calculus
3 Gen. educ. elective

*Freshman Year*
*Second semester: 17 credits*

4 CHM 124 Organic Chemistry
3 MCE 162 Statics
3 MTH 142 Intermediate Calculus
3 PHY 213 Elementary Physics
1 PHY 285 Physics Lab.
3 Gen. educ. elective

*Sophomore Year*
*First semester: 17 credits*

3 MTH 243 Calculus
3 PHY 214 Elementary Physics
1 PHY 286 Physics Lab.
3 URB 210 Introd. to Urban Affairs[18]
4 ZOO 111 General Zoology
3 Gen. educ. elective

*Sophomore Year*
*Second semester: 15 credits*

3 CSC 201 Introd. to Computing
3 CVE 220 Mechanics of Materials
3 MTH 244 Differential Equations
3 SOC 202 General Sociology
3 ZOO 242 Human Physiology

*Junior Year*
*First semester: 15 credits*

3 CHE 333 Engineering Materials
3 CPL 410 Urban Planning[18]
3 MCE 372 Engineering Analysis I
3 MCE 341 Thermodynamics or PHY 420 Introd. to Thermodynamics
3 ZOO 262 Introductory Ecology

*Junior Year*
*Second semester: 15 credits*

3 ACC 201 Accounting
3 ART 284 Architectural History
3 ECN 402 Urban Economics[18]
3 MCE 366 Introd. to Systems Engineering
3 SOC 434 Urban Sociology[18]

*Senior Year*
*First semester: 18 credits*

3 CVE 346 Transportation Engr.
3 IDE 432 Operations Research I
3 URB 398 Urban Seminar[18]
6 Professional electives
3 Free elective

*Senior Year*
*Second semester: 15 credits*

3 CVE 374 Environmental Engr. I
3 IDE 433 Operations Research II
6 Professional electives
3 Free elective

[17]Students are required to take either CVE 396 or CVE 495.

[18]Urban core course.

# College of Human Science and Services

Robert W. MacMillan, *Dean*
Barbara Brittingham, *Assistant Dean*
Leo E. O'Donnell, *Assistant Dean*
M. Thelma Kenyon, *Assistant Dean for Administration*

The College of Human Science and Services is a people-oriented college that was designed to focus on the human and non-human resources needed to help individuals and groups solve human problems encountered in contemporary society. Programs in the college provide training for professionals to assess human problems and to develop the helping skills necessary for the effective delivery of human services to individuals and groups in need. These programs include both formal and informal experiences with people in a wide variety of public service settings and enable students to develop the competencies needed in the emerging field of human services.

The college offers undergraduate programs in human development and family studies; home economics; home economics education; textiles, clothing and related art; textile marketing; physical education, health, and recreation; and elementary and secondary education. It also offers interdisciplinary programs in general home economics, gerontology, urban affairs, consumer affairs and special populations. Students are encouraged to maintain close contact with their advisers in order to be informed of new curriculums and course options as they develop.

The degrees currently offered by the college include: (1) a Bachelor of Science degree with concentration in physical education; (2) a Bachelor of Science degree with a concentration in textile marketing; and (3) a Bachelor of Science degree in home economics with concentrations in human development and family studies; general home economics; home economics education; home economics in the urban environment; and textiles, clothing, and related art; and (4) a Bachelor of Arts degree in elementary and secondary education.

The college is currently composed of four departments and a Division of Interdisciplinary Studies.

The Institute of Human Science and Services, the research and service branch of the college, promotes these activities in human service areas across all departments of the college. The institute carries on research in education and educational testing, lifelong learning, human transition, child development, special populations, gerontology, and exercise physiology. Faculty who are involved in the research of the institute also teach within the various departments of the college.

The college sponsors the URI Clearinghouse for Volunteers, a service which matches prospective volunteers with positions in Rhode Island's human science and service agencies, giving students opportunities to explore career options and provide needed service.

*Education Faculty:* Professor Long, *chairperson*. Professors Bumpus, Heisler, P. Kelly, McGuire, Nally, Purnell, Russo and Willis; Associate Professors Allen, Brittingham, Calabro, Croasdale, Kellogg, W. Kelly, MacKenzie, May, McKinney, Nagel, Nelson, Pezzullo and Soderberg; Assistant Professors Bristow, Farstrup, Greene, Griesemer, Horwitz, Kalymun, Morton, O'Neill, Sullivan and Whitcomb; Instructor Boulmetis; Adjunct Professors Crafts, Hicks, Knott and Tierney.

*Human Development, Counseling, and Family Studies Faculty:* Professor Zweig, *chairperson*. Professors Cohen, Fitzelle and Maynard; Associate Professors Greene, Gunning, Pascale, Rae, Schaffran and Spence; Assistant Professors Blackman, Blood, Christner, Cooper, Frank, Darnley, Kohut, Lown, Noring, Schroeder and Votta; Adjunct Professor Guthrie; Adjunct Assistant Professors Anderson, Kowalski and Mosher.

*Physical Education, Health and Recreation Faculty:* Associate Professor Polidoro, *chairperson*. Professors Massey, Nedwidek, Reid and Sonstroem; Associate Professors Bloomquist, Calverly, Clegg, Cohen, Crooker, Del-Santo, Maack, Mandell, O'Donnell, O'Leary, Piez, Robinson, Sherman and Zarchen; Assistant Professors Falk, Henni, Norris, Rivera and Seleen; Special instructors Marsden and McAniff; Adjunct Associate Professors Lemaire and Robb.

*Textiles, Clothing and Related Art Faculty:* Associate Professor Helms,

*chairperson.* Associate Professor Weeden; Assistant Professors Higa, James, Risch, Scruggs and Welters; Curator Kaye; Adjunct Assistant Professor Lundberg.

*Division of Interdisciplinary Studies Faculty:* Gerontology: Associate Professor Spence, *program head;* General Home Economics: Assistant Professor Noring, *program head;* Consumer Affairs: Assistant Professor Lown, *program head;* Urban Affairs: Assistant Professor Noring, *program head;* Special Populations: Associate Professor Crooker, *program head.*

## General Education Requirements

All students pursuing a bachelor's degree in the College of Human Science and Services (except those enrolled in the B.A. degree program in elementary and secondary education[1]) are required to develop a 39-credit program in general education within the framework listed below. For a complete description of the general education requirements see page 9.

Individual programs may require specific courses for their area.

*English Communication* (6 credits) A minimum of 3 credits in written communication from courses in Group Cw; a minimum of 3 credits in oral communication from courses in Group C approved for general education.

*Fine Arts and Literature* (6 credits)

*Foreign Language and Culture* (6 credits)

*Letters* (6 credits)

*Mathematics* (3 credits)

*Natural Sciences* (6 credits)

*Social Sciences* (6 credits) A minimum of 3 credits from psychology, sociology, or anthropology courses approved for general education.

Total: 39 credits.

**Division of Interdisciplinary Studies.** This division provides an environment in which faculty and students may bring together interdisciplinary programs and courses of study in human science and services. The division functions to promote and encourage the creation, implementation, and evaluation of interdisciplinary courses and programs of study taught by faculty from two or more departments within the University. In addition, the division assumes responsibility for the development, review, and implementation of programs of study which draw significantly on two or more human science and services departments. The division maintains administrative responsibility for the following programs: General Home Economics (see page 65); Home Economics in the Urban Environment (see page 67); Consumer Affairs (below); Gerontology (see page 11); and Special Populations (see page 11).

**Area of Interest Option: Interdisciplinary Non-Degree Programs.** The college currently offers an area of interest option for all students enrolled in the college. Under this option students may declare an area of interest which will appear on their transcripts as a category separate from their major. Credits may be drawn from any cohesive combination of courses. An area of interest may be defined as (1) the completion of 18 or more credits offered within a department and approved by the department chairperson, or (2) the completion of 18 or more credits of related studies offered by more than one department and approved by a member of the faculty competent in the area of interest and the dean of the college. It is the responsibility of the student to declare and obtain approval for an area of interest no later than the end of the add period at the start of the senior year.

## Consumer Affairs

This curriculum leads to the Bachelor of Science (B.S.) degree in consumer affairs. This interdisciplinary program within the Division of Interdisciplinary Studies provides a general background for students who wish to develop effective strategies for dealing with complex social and economic systems relating to consumer concerns. Coursework in consumer affairs is combined with selected courses in business, economics, political science and related areas. Field experience and internships are an integral part of the program.

Graduates with this degree may choose careers in consumer affairs in business, social service agencies, local or state government consumer protection agencies, Cooperative Extension Service, and Consumer Education.

Students are required to take CNS 220, 320, 420, MKT 334, BSL 333, and CNS 470 or MKT 491. An additional 15 credits must be selected from a specified list of consumer related courses.

In addition, students are required to take 12 credits in a professional concentration. A total of 128 credits is required for graduation.

## Education

The curriculum in elementary and secondary teacher education leads to the Bachelor of Arts (B.A.) degree. The Master of Arts (M.A.) degree programs in education are described in the *Graduate School Bulletin.*

The curriculums offer a balanced program of academic preparation and professional training. The required professional courses contribute directly both to teaching skills and to the teacher's role in society.

The department also offers sufficient courses to allow a student to complete an area of interest. Students should consult the department chairperson or an education adviser in University College.

The following courses are required in the professional sequence: EDC 102 or 103, 312 or 313, 371 or 372, 484, and 485; PSY 113 and 232.

In addition, secondary education students will take EDC 430; elementary education students will take EDC 427 and 428 prior to student teaching and EDC 424 after student teaching. EDC (MUS) 329 is also strongly advised for elementary students.

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[1]Students enrolled in the elementary and secondary education programs leading to the B.A. degree should follow the general education requirements for the College of Arts and Sciences (see page 30).

Students may apply to the department from University College upon completion of University College requirements and should consult with the education adviser as early as possible for further information, since openings in the programs are limited.

All students in the department will plan, in cooperation with an adviser, a second concentration of 27-30 credits. This may or may not be declared as a "double concentration." The second concentration of secondary education students must be in the area for which a teaching certificate is sought.

After admission to the curriculum, all students must maintain an average of at least 2.20, and attain a grade of at least C in EDC 430 or 427 and 428 to be eligible for student teaching. Failure to meet these two conditions will lead to automatic dismissal from the program.

A total of 120 credits is required for graduation.

## General Home Economics

The curriculum in general home economics leads to the Bachelor of Science (B.S.) degree in home economics. Interdisciplinary in nature, the program provides for academic work in all areas of home economics combined with a professional area of interest selected by the student. Professional areas of interest prepare students for fields such as community agency work, home economics in business, journalism, and home economics in the urban environment.

Students are required to take five to six credits from FSN 150, 201, 207, or 237; six credits from HCF 150, 200, or 201; HCF 330, 357; CNS 210; three credits from CNS 220, or 320; CNS 340; HSS 320; HEC 400; TXC 103, 224; three credits from TXC 216, 327, 340, or 440. Students are required to take additional courses that will give a total of 15 credits in one area of home economics (FSN, HCF, CNS or TXC) with at least 9 credits at the 300 or 400 level.

In addition, students are required to take 18 credits in a professional area of interest, of which at least 9 credits are to be taken in a single area (adviser approval required); and field experience for at least 3 credits (adviser approval required).

A total of 128 credits is required for graduation.

## Home Economics Education

The curriculum in home economics education leads to a Bachelor of Science (B.S.) degree in home economics. The Master of Science (M.S.) degree is also offered by the department and is described in the *Graduate School Bulletin*.

The curriculum provides the following two options:

**Option I: Teacher Certification.** This program meets the state of Rhode Island requirements for certification (K-12) and also meets the Interstate Certification Compact which allows certification reciprocity with 31 states. The student teaching experience in the public schools (as well as additional field experiences) is included in the program during the senior year.

*Note:* Eligibility for student teaching will require a student to maintain a 2.5 quality point average in home economics courses and attain at least a C grade in HED 337 Teaching Effectiveness. Failure to meet these two conditions will lead to automatic dismissal from the certification option in the Home Economics Education Teacher Program.

**Option II: Non-Teacher Certification.** This program prepares individuals to teach and direct home economics educational activities in settings such as business, community agencies, adult programs, and home economics cooperative extension. An eight-credit eight-week intern experience is included in the program during the senior year.

Students are required to select and pass one course in each of the following home economics core areas: HCF 150, 200, or 330; FSN 201, 207, or 237; CNS 210, 220, 320, or 340; TXC 103 or 224. If not taken to complete the core requirements, students must also complete HCF 200, 330 and one HCF elective; EDC 102 or 403, or 407, and 312; EDC 484 or HED 483; HED 334, 337, EDC/HED elective; FSN 201, 207, FSN elective; CNS 320, 340, CNS elective; TXC 103, 216, a clothing construction course.

A total of 128 credits is required for graduation.

## Human Development and Family Studies

The curriculum in human development and family studies leads to a Bachelor of Science (B.S.) degree in home economics. The Master of Science (M.S.) degree also offered by the department is described in the *Graduate School Bulletin*. The undergraduate curriculum provides a general background for work with children, families, and adults. Most such professions require academic work beyond the bachelor's degree for continuing professional work and advancement. Individuals with a baccalaureate degree are employed as professionals, however, in nursery schools, day-care centers, institutions and hospitals, recreational, child guidance, case work, and other community agencies. Some of the courses in this curriculum, plus certain others in education, meet the requirements for the Provisional Nursery-Kindergarten Certificate in Rhode Island. The Professional Certificate requires successful teaching experience for five years and additional academic work.

Students are required to select and pass one course in each of the following home economics core areas: FSN 201, 207, or 237; CNS 210, 220, 320, or 340; TXC 103 or 224. Students must also take: HCF 150, 200, 203, 357, 330, 304, 400, 430, 310 or 420 or 406. Additionally, students must complete 18 credits in home economics or related areas subject to the approval of the departments, with a maximum of six credits in any one area outside home economics. EDC 484, 485 and HCF 380 may not be used.

Students who wish to meet the requirement for the Provisional Nursery-Kindergarten Certificate in Rhode Island must take the following courses in addition to the above: EDC 102 and 312, 484, and 485; HCF 301 and 303. The sequence of courses is extremely important since placements for student teaching will be during the fall semester only. Students interested in certification must apply by their third semester. It is suggested that they see their University College advisers as early as possible in their program.

A total of 128 credits is required for graduation.

## Physical Education, Health and Recreation

This curriculum leads to a Bachelor of Science (B.S.) degree with a concentration in physical education. The Master of Science (M.S.) program in physical education is described in the *Graduate School Bulletin*.

The curriculum, composed of two major options, is designed for students who plan to pursue a career within the broad field of health, physical education, recreation, and dance. Students may prepare for certification as public school teachers while selecting additional emphasis in either elementary physical education, secondary physical education, athletic coaching, athletic training, or health education. For those who may be interested in other than school careers the curriculum offers a non-teaching option with specializations in dance, physical fitness, corrective and adapted physical education, as well as in a variety of individualized interdisciplinary areas.

Regardless of which of the two options the student is pursuing, the following courses are required of all majors: HLT 123, PED 270, 369, 370, physical activity majors practicum (8 credits), and physical education emphasis area (12-24 credits).

The following non-physical-education courses are required of all students and may be taken to partially fulfill the general education requirements: BIO 101, 102, chemistry or physics (3 credits), ZOO 121, 242, 343, PSY 113, 232, EDC 312, SPE 101 or 102.

All students are also required to complete a minimum of eight practicum credits taken from the following: one credit from PED 121 or 122; two credits from PED 123, 124, 125, or 126; one credit from PED 221, 222, or 223; one credit from PED 251 or 252; one credit from PED 325, 326, or 327; one credit from PED 130, 230, 330, 335, or 340; one credit from PED 321. The above requirements are considered minimal.

**Teacher Certification Option.** This option is designed for students seeking teacher certification in health and physical education at the elementary or secondary school level. It allows a broad exploration of subject area, but is flexible enough to provide areas of emphasis in (1) elementary physical education, (2) secondary physical education, (3) athletic coaching, (4) health education, (5) athletic training. Students not desiring to pursue an emphasis area will fulfill requirements of the general program of studies. Completion of the certification program fulfills the requirements for teacher certification in the state of Rhode Island.

Within the teacher certification option, the following additional courses are required: HLT 172[2] PED 285, 295, 380, 410, 314, or HLT 356[3], EDC 484, 485.

Students electing elementary physical education for emphasis must take PED 324, 351, 352, 354 and either PED 315 or 317.

Students electing secondary physical education for emphasis must take PED 315, 317, 324, and either PED 247 or 248. Students must also complete an additional six credits from PED 243, 331, 362, 364, 384, 386, RCR 290, 383, or FSN 207. Only one coaching course may be applied.

Students electing health education for emphasis must take HLT 357, 359, 367, and EDC 401.

Students electing athletic training for emphasis must take PED 243, 343, FSN 207 and three additional credits from PED 344, 345, HLT 272 and HLT 357 or 367[4].

Students electing coaching for emphasis must take PED 243, 263, 315, 317 and four credits from PED 247, 248, 362, 364, 384, 386, or FSN 207.

Students who do not specialize in any of the above areas must complete a minimum of twelve credits of physical education, including PED 324, 315, 317 and an additional eight credits selected from EDC 401, FSN 207 or any other departmental offering excluding intercollegiate athletics.

**Non-Teacher Certification Option.** This option is designed for students seeking preparation for careers in non-school settings. The option provides additional opportunity for specializations in (1) dance, (2) physical fitness, (3) corrective and adapted physical education, (4) interdisciplinary areas of interest.

In addition to the requirements listed above for all physical education majors, students in the non-teacher option are required to take: RCR 382, PED 317, three credits of seminar, and 12 credits of supervised field work.

Students selecting dance as a specialization must take PED 106B, 324, 331, 466, four credits from PED 106A, 106C, 106D, 106E, THE 151, 215, 216, and any two of the following courses: MUS 111, THE 100, 111, ART 215, SPE 231, or PHL 455.

Students selecting the physical fitness specialization must take FSN 207, PED 243, 275, 391, HLT 172, and either PSY 103 or HCF 150, and eight credits from PSY 103, HCF 150, 220, 450, HLT 272, or PED 410.

Students selecting specialization in corrective and adapted physical education must take PED 370, 410, 430X, HLT 172, one course from RCR 416, PED 351 or 275, and one course from PSY 442, 471, or NUR 101.

Students who do not specialize in any of the above areas may complete a minimum of 18 credits in an individual, college, or University area of interest. See page 31 for a complete definition of an area of interest.

A total of 130 credits is required for graduation.

## Textiles, Clothing, and Related Art

This curriculum leads to a Bachelor of Science (B.S.) degree in home economics. The Master of Science (M.S.) program is described in the *Graduate School Bulletin*.

The curriculum is open to both men and women with ability and professional interest in the artistic and technical aspects of the subject.

Programs of study can be arranged to prepare students for positions in merchandising of apparel and interior furnishings, the home sewing industry, museum work, consumer services, and manufacturing. Qualified students can prepare for graduate studies.

Students in this curriculum are required to select and pass one course in

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[2]Not required of students pursuing coaching and athletic training emphasis.

[3]Required of students pursuing health education emphasis.

[4]Students seeking NATA certification must complete all courses listed (20 credits).

each of the following home economics core areas: HCF 150, 200, or 330; FSN 201, 207, or 237; CNS 220[5], TXC 103 or 224. If not taken to complete the core requirements, the following courses are required: TXC 103, 224, 216 or 327, 303[6], 340 or 440, 390, 433[5], 9 credits of TXC electives (6 credits must be upper level courses); in addition, 18 credits with at least 9 credits in any one area must be selected in relation to specified professional options listed below.

**Fashion Merchandising.** Students selecting this area of emphasis should take TXC 322, 422 and an additional 18 credits of professional electives[7] from marketing, accounting, business education, business law, management, or art.

**General TCRA Program.** Students selecting this area of emphasis should plan according to their professional goals such as consumer education, gerontology, family studies, and design for special needs groups. Eighteen credits of professional electives are required and should be chosen to strengthen professional goals of students.

**Textile Chemistry and Technology.** Students selecting this area of emphasis should plan to spend one or two semesters in off-campus study to fulfill the specialized requirements in textile dyeing, finishing, and manufacturing. By the end of the sophomore year the student and adviser should have a program of study approved by the department. This option is currently with the Philadelphia College of Textiles and Science.

Students interested in this area of emphasis must take 3-9 credits in MTH 109, 141, 142; 3-6 credits in PHY 111 and 112 or 213 and 214; 3-6 credits in EST 408 or 412 or CSC 201 or 202 or ECN 123, and 18 credits of professional electives[7] selected from CHM 101 and 102, 112 and 114, 227, 228 and 226, 212.

A total of 128 credits is required for graduation.

## Textile Marketing

This interdepartmental curriculum leads to a Bachelor of Science (B.S.) degree with a concentration in textile marketing. It combines the professional requirements of a concentration in textiles and clothing with the accreditation requirements of the College of Business Administration and is designed to prepare students for wholesale and retail marketing positions in the textile industry.

Students selecting this curriculum must take the following courses: TXC 103, 224, 303, 340 or 440, 403, 433, and three credits of TXC electives; CHM 105, 124; MTH 141; ESC 408, 412; CSC 201; ACC 305; MGT 300 or 301; BSL 333; MKT 323, 462, 464, and nine credits of MKT electives.

Students must also take the following courses to complete the general education requirements: MTH 109, CHM 103, and ECN 123.

A total of 120 credits is required for graduation.

## Urban Affairs

This interdisciplinary curriculum leads to a Bachelor of Science (B.S.) degree in home economics by combining courses of study in home economics and urban affairs. The home economics in the urban environment curriculum adds an understanding of urban areas and their people to a student's preparation in a broad home economics program. Students gain integrated understanding of families and their use of human and non-human resources to attain family goals, and the urban-related courses familiarize the students with the special needs of families in urban areas. Students with such a major might seek careers in urban cooperative extension, social welfare agencies or consumer protection agencies.

Students are required to select and pass one course in each of the following home economic core areas: HCF 150, 200, or 330; FSN 201, 207, or 237; CNS 210, 220, 320, or 340; TXC 103, or 224. In addition, if not taken to complete the core requirements, students must complete HCF 200, 357, 330, FSN 201, 207 and one FSN elective; CNS 210, 320, 371; TXC 103, 216, 224. The requirements for 15 credits of professional electives is satisfied by the urban affairs common core, a requirement for students in all urban affairs curriculums. (See page 12.)

In addition to the courses listed above, students must take three urban-related courses from the following list or consult the adviser for others. Adviser consultation is recommended for these courses.

| | |
|---|---|
| HCF 220 | Gerontology Theory and Application |
| HCF 380 | Field Experience in Community Agencies |
| HED 491 | Teaching Home Economics: Adults |
| CNS 401 | Home Management of Deprived Families |
| CNS 420 | Consumer Protection |
| CNS 470 | Special Problems in Home Management |
| ADE 497 | The Cooperative Extension Service |
| ADE 488 | Methods and Materials for Adults and Extension Education |
| ECN 401 | Poverty in the United States |
| HIS 344 | History of North American Indians |
| HIS 346 | Immigrant to Ethnic in Modern American History |
| HIS 347 | Women in the Twentieth Century |
| PSC 221 | State and Local Governments |
| PSC 288 | The American Legal System |
| SOC 336 | Social Stratification |
| SOC 340 | Minority and Majority Relations |
| SOC 438 | Aging in Society |
| SWF 311 | Introduction to Social Work |
| SWF 313 | Social Welfare Services |
| SWF 317 | Social Work Methods |

A total of 128 credits is required for graduation.

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[5]Economics prerequisite for CNS 220 and TXC 433.

[6]Organic chemistry is a prerequisite for TXC 303.

[7]Professional electives are courses related to student's career goals and subject to adviser's approval.

# College of Nursing

Barbara L. Tate, *Dean*
Myrtle S. Matejski, *Assistant Dean*

The College of Nursing offers a curriculum leading to the Bachelor of Science (B.S.) degree. The Master of Science (M.S.) degree also offered by the college is described in the *Graduate School Bulletin*.

*Faculty:* Professors Garner, Kang, Tate; Associate Professors Castro, Feather, Hirsch, Houston, Matejski, McElravy and Schwartz-Barcott; Assistant Professors Abbate, Barden, Bissell, DeCosta, Evans, Fortin, Furlow, Haggerty, Halpin, Hames, Joseph, Manfredi, Minardi, Morgan, O'Flynn, Pearson, Smith and Waldman; Instructors Burchard, Hogan, Kachadourian, Risio, Ryan, Stumpf and Sullivan.

The baccalaureate program is designed for men and women with academic, personal, and professional potential. It aims to develop mature, well-informed graduates who will take their places as responsible members of society in meeting the challenges of health care delivery and of continued learning.

The curriculum is based on the belief that nursing is a creative activity which provides human services for the promotion of health, prevention of illness, and care for the ill, and that it is interdependent with all other disciplines concerned with health. Nursing knowledge is viewed as a unique synthesis drawn from the humanities, and natural, biomedical, and social sciences. The conceptual approach to nursing study incorporates the whole person and his environment, adaptation-level theory, and nursing process. Nursing courses include observation and clinical practice in numerous hospitals, community agencies, schools, nursing homes, and physicians' offices throughout the state of Rhode Island.

There are three routes to admission to the College of Nursing baccalaureate program.

*1) Students with no previous college of nursing study* begin their preparation in University College with dual enrollment in the College of Nursing. After completion of 45-60 credits which must include required foundation courses with a minimum 2.2 quality point average, they may apply for confirmed admission to the College of Nursing. Priority is given to students with strong academic records and positive recommendations from faculty in introductory nursing courses.

*2) Students with college study in another major* or some nursing study in another baccalaureate program and a minimum of 45 completed credits, if accepted by the University, may be admitted directly.

*3) Registered nurse students* who have completed diploma or associate degree programs are not required to submit scholastic aptitude scores when seeking admission. As adult students who have developed a meaningful competence in basic subject areas, they may demonstrate their mastery by completing the College Level Examinations sponsored by the College Entrance Examination Board. Advanced credit allowances are based upon a review of the candidate's test scores and preparatory experience. Following direct admission to the college, students have the option of seeking credit by examination in subjects previously studied. They are required to enroll in some upper division nursing courses and to meet remaining program specifications.

The usual time for completion of all requirements for students with no previous college or nursing study is eight semesters and one summer session. All students in the College of Nursing meet all of the general education requirements of the University as listed on page 9. A minimal grade of C must be achieved in all required nursing courses. The faculty reserves the right to require withdrawal from the college of a student who gives evidence academically and/or personally of inability to carry out professional responsibility in nursing. The student is limited to 18 credits per semester except by permission of the dean for special program adjustments or for participation in the Honors Program.

General expenses for students in the College of Nursing are approximately the same as for all other University students. Special items include uniforms, nursing equipment, transportation, and one summer session. The use of an automobile or funds to meet public transportation costs is required during the semester of community health nursing experience, and can offer broader opportunities for experience in all courses.

The program is approved by the National League for Nursing and the Rhode Island Board of Nurse Registration and Nursing Education. The graduate is eligible for examination for professional licensure.

## Curriculum Requirements

**Foundation Courses.** The following are required before transfer from University College: CHM 103, 105, 124 (8 credits), MIC 201 (4), NUR 101[1] (2), PHC 225 (2), PSY 113 (3), ZOO 121, 242, 244 (8).

The following are required before beginning the nursing major and therefore are recommended during the first two years: FSN 207 (3 credits), NUR 220[1] (4), PSY 232 or HCF 200 (3), PHY 102 (3), SOC 202 (3), English Communication (6).

*Freshman Year*
*First semester: 14 credits*

3 CHM 103 Introd. Chemistry
1 CHM 105 Introd. Chemistry Lab. **or**
3 CHM 101 General Chemistry
1 CHM 102 General Chemistry Lab.
3 WRT 101 Composition I
3 SOC 202 General Sociology
4 ZOO 121 Human Anatomy

*Freshman Year*
*Second semester: 16 credits*

4 CHM 124 Organic Chemistry
3 PHL 101 Logic: The Principles of Reasoning
2 NUR 101 Introd. to Nursing
3 PSY 113 General Psychology
3 ZOO 242 Human Physiology
1 ZOO 244 Human Physiology Lab.

**Nursing Major Courses.** The following are required for the nursing concentration: NUR 231 (6), 232 (4), PCL 226 (3), NUR 301 (7), 302 (4), 311 (3), 312 (3), 321 (3), 322 (4), 333 (5), 334 (5), 335 (2), 350 (2).

**General Education and Free Electives.** The general education electives as required for all University undergraduates must be completed except that one of the following divisions may be reduced by 3 credits: fine arts and literature, letters, or foreign language and culture.

A total of 128 credits is required.

[1]Registered nurse students take NUR 211 (3 credits) and free electives in place of NUR 101 and 220.

# College of Pharmacy

Louis A. Luzzi, *Dean*
Lois Vars, *Assistant Dean*

The College of Pharmacy offers a five-year curriculum leading to the Bachelor of Science (B.S.) degree in pharmacy and a special curriculum leading to the Bachelor of Science (B.S.) degree in respiratory (ventilation) therapy. The Master of Science (M.S.) degree, offered by all departments; the Doctor of Philosophy (Ph.D.) degree in pharmaceutical sciences offered by all departments except pharmacy administration, and the Master of Science (M.S.) degree in environmental health science are described in the *Graduate School Bulletin*.

## Pharmacy

This five-year curriculum is patterned on presently accepted programs of study recommended by the American Association of Colleges of Pharmacy, the American Council on Pharmaceutical Education, and other interested organizations. It is accredited by the American Council on Pharmaceutical Education and by the University of the State of New York, Division of Professional Education.

It provides preparation for community and institutional pharmacy practice. In addition, students have opportunities through the selection of professional electives to commence a specialization in one of several areas of pharmacy, including hospital, clinical, manufacturing, medical supply servicing, drug analysis, administration, and research.

The satisfactory completion of the degree in pharmacy is one of the prerequisites for a license to practice pharmacy. Licensure is obtained after graduation by successfully completing the examination given by the Rhode Island State Board of Pharmacy or those of other states. In preparation for this, students are encouraged to participate in externship or internship programs.

Students begin their preparation in University College with a dual enrollment in the College of Pharmacy. All students requesting transfer from University College to the College of Pharmacy must have at least a 2.0 overall quality point average in those basic science courses required for transfer; viz., at the end of three semesters CHM 101, 102, 112, 114, and 227; MIC 201; MTH 141; PHY 109; ZOO 111 and 121; at the end of four semesters the foregoing courses plus CHM 226 and 228; ZOO 242 and 244 (or equivalent courses, where permitted).

A quality point average of 2.0 in all required professional courses given by the College of Pharmacy is required for graduation with a B.S. degree in pharmacy. This is in addition to University grade requirements.

Students in certain other New England states may enroll in pharmacy under the New England Regional Student Program. See page 18.

*Medicinal Chemistry Faculty:* Professor C. I. Smith, *chairperson.* Professors Abushanab, Turcotte; Associate Professor Panzica; Adjunct Professor Modest; Emeritus Professor Bond.

*Pharmacognosy and Environmental Health Faculty:* Professor Worthen, *chairperson.* Professors Shimizu and Youngken; Assistant Professor Lasswell; Adjunct Professors Nakanishi and Siino; Clinical Professor Cannon.

*Pharmacology and Toxicology Faculty:* Professor DeFeo, *chairperson.* Professor DeFanti; Associate Professor Swonger; Adjunct Professors Karkalas, Lal, Turner; Adjunct Associate Professors Cardinale, Fielding, Kaplan, Lundgren, Pogacar, Smith and Vidins; Adjunct Assistant Professors Dexter, Giambalvo, Hammond, Jackim, Khan, Malcolm, Miller, Verrier and Villatico; Clinical Professors Calabresi and Becker; Clinical Lecturer Yashar.

*Pharmacy Faculty:* Professor Rhodes, *chairperson.* Professors Greene, Osborne and Paruta; Associate Professor Lausier; Associate Professor (Clinical) Mattea; Assistant Professor Birmingham; Assistant Professors (Clinical) Bucci, DeTorres, Dionne, Dugas, Jerome, Weber; Instructors Amore, Borruso, Panaggio and Vars; Adjunct Associate Professor Schwartz; Adjunct Assistant Professors Haier, Kaplan and Tice; Adjunct Assistant Professors (Clinical) Danish and Marr; Adjunct Instructors Auger, Cotnoir, Fisher, Gibson, Haspela, Holm, Kaufman, King, Lancaster, Lombardi, Measley, Murphy and Wellins; Clinical Professors Carlin and Guthrie.

*Pharmacy Administration Faculty:* Professor Campbell, *chairperson.* Special Lecturer Hachadorian; Adjunct Professors Ford and Leco; Adjunct Instructor Pagliarini.

**Curriculum Requirements**

The five-year program for all accredited colleges of pharmacy provides time for the general education requirements as described on page 9. The major portion of the professional program begins in the third year when basic pharmaceutical and clinical disciplines are introduced.

Each year the curriculum is supplemented by field trips to selected pharmaceutical industries. Students also make use of selected hospital and community pharmacies in Rhode Island and New England for clinical studies and internship requirements.

*First Year*
*First semester: 17 credits*

3 CHM 101 Gen. Chemistry I
1 CHM 102 Lab. for Chemistry 101
3 PSY 113 Gen. Psychology **or** elective
3 WRT 101 Composition
4 ZOO 111 General Zoology
3 Elective

*First Year*
*Second semester: 17 credits*

3 CHM 112 Gen. Chemistry II
1 CHM 114 Lab. for Chemistry 112
3 MTH 141 Introd. Calculus
3 WRT 102 Literature & Composition **or** SPE 201 Interpersonal Communication
4 ZOO 121 Human Anatomy
3 Elective

*Second Year*
*First semester: 17 credits*

3 CHM 227 Organic Chemistry Lecture
3 ECN 123 Elements of Economics **or** ECN 125 Econ. Principles
4 MIC 201 Introd. Med. Microbiology
4 PHY 109 Introd. to Physics **or** PHY 111 Gen. Physics
3 Elective

*Second Year*
*Second semester: 17 credits*

3 CHM 228 Organic Chemistry Lect. II
2 CHM 226 Organic Chemistry Lab.
2 HTT 272 Advanced First Aid
3 ZOO 242 Introd. Human Physiology
1 ZOO 244 Introd. Human Physiology Lab.
6 Electives

*Third Year*
*First semester: 17 credits*

4 PHC 333 Gen. Pharmacy
3 BCP 311 Introd. Biochemistry
3 PAD 349 Pharm. Admin. Principles
3 ZOO 242 Introd. Human Physiology
1 ZOO 244 Introd. Human Physiol. Lab.
3 MCH 342 Pharmaceutical Analysis **or** elective

*Third Year*
*Second semester: 18 credits*

4 PCL 338 Pharmacol. & Biopharmaceutics
3 PAD 351 Pharmaceut. Law & Ethics
2 PHC 371 Introd. to Clinical Pharm.
3 APA 401 Introd. to Pathology
3 MCH 342 Pharmaceutical Analysis **or** elective
3 Elective

*Fourth Year*
*First semester: 17 credits*

3 MCH 443 Organic Medic. Chemistry
4 PCL 441 Gen. Pharmacology
1 PCL 443 Gen. Pharmacology Lab.
3 PCG 445 Gen. Pharmacognosy
1 PCG 447 Gen. Pharmacognosy Lab.
3 PHC 345 Pharmaceutical Technology
2 PHC 451 Pharmacotherapeutics I

*Fourth Year*
*Second semester: 17 credits*

3 MCH 444 Organic Medic. Chemistry
4 PCL 442 Gen. Pharmacology
1 PCL 444 Gen. Pharmacology Lab.
4 PHC 346 Dose Form Technology
3 PCG 446 Gen. Pharmacognosy
2 PHC 452 Pharmacotherapeutics II

*Fifth Year*
*First semester or second semester: 17 credits*

4 PHC 385 Pharmacy Practicum
1 PHC 386 Pharmacy Practicum Lab.
3 PCG 459 Public Health
9 Electives

*Fifth Year*
*Second semester or first semester: 12 credits*

6 PHC 390 Pharmacy Practice Externship[1]
6 PHC 490 Clinical Pharmacy Clerkship

## Respiratory Therapy

The program in respiratory therapy prepares students for an allied health specialty related to the management of respiratory disease. The respiratory therapist works with the physician, pharmacist, nurse, and other

[1]Assignments will be made by the externship coordinator during the spring semester of a student's fourth year.

specialists in a hospital or institutional environment where multiple responsibilities are necessary in the care of patients.

**Curriculum Requirements**

To qualify for the Bachelor of Science program in respiratory therapy, students must complete a two-year program in respiratory therapy including clinical work. This may be carried out in the Community College of Rhode Island and Rhode Island Hospital course or an equivalent community college with a clinical program in respiratory therapy leading to an associate degree.

The student program at the University of Rhode Island includes one of three areas of concentration — basic sciences (research), education, or administration/supervision.

A total of 65 University of Rhode Island credits are required.

The following curriculum is subject to change.

*Junior Year*[2]
*First semester: 16 credits*

4 CHM 124 Organic Chemistry
3 MTH 141 Introd. Calculus with Analytic Geometry
3 SOC 202 Gen. Sociology
3 EDC 430 Methods and Materials in Secondary Teaching
3 Elective[3]

*Junior Year*
*Second semester: 16 credits*

3 APA 401 Introd. to Pathology
3 MGT 300 Personnel Administration or MGT 301 Fundamentals of Management[4]
3 CSC 201 Computer Science
4 PHY 112 Gen. Physics
3 Elective

*Senior Year*
*First semester: 18 credits*

3 BCP 311 Introd. Biochemistry
3 ELE 300 Elec. Instrum. for Biology and Health Sciences
3 EDC 312 The Psychology of Learning
3 SOC 324 Medical Sociology
3 RTH 499 Special Problems in Respiratory Therapy
3 Elective

*Senior Year*
*Second semester: 15 credits*

3 PCL 226 Pharmacology and Therapeutics
3 RTH 499 Special Problems in Respiratory Therapy
3 Elective
3 Elective
3 Elective

[2]Summer session programs may be needed to fulfill all curriculum requirements.

[3]Additional prerequisites may be required for certain elective areas of concentration.

[4]MGT 301 required for students with an administration/supervision core.

# College of Resource Development

Gerald A. Donovan, *Dean*
Albert L. Owens, *Associate Dean for Resident Instruction*

The College of Resource Development offers undergraduate programs leading to the Bachelor of Science (B.S.) degree in animal science and technology, aquaculture and fishery technology, food science and nutrition, natural resources, plant science and technology, and urban affairs. A number of options have been developed within most programs to permit students to prepare for specific graduate study, further professional training, or for specialized careers at the B.S. level. Entering freshmen and transfer students with fewer than 24 credits should matriculate in one of these programs as well as in University College. Students may select one of the options at the time of transfer from University College or later, with approval dependent upon favorable review by the program faculty. The college also offers a two-year program in fisheries and marine technology leading to the Associate in Science (A.S.) degree. All undergraduate programs are administered by the Associate Dean for Resident Instruction together with the academic advisers and the program faculties.

The Resource Development faculty differs from those in the other colleges in that most hold joint appointments with the Rhode Island Agricultural Experiment Station and/or the Rhode Island Cooperative Extension Service. These units represent the formal research and public service functions of the college and are funded with federal and state monies. In addition, some faculty members have formal commitments to the International Center for Marine Resource Development and the Sea Grant program.

Graduate programs leading to the Master of Science (M.S.) degree are offered in most departments. Several programs lead to the Doctor of Philosophy (Ph.D.) degree. The professional degree of Master of Community Planning (M.C.P.) is offered by the Department of Community Planning and Area Development. Detailed descriptions of the several graduate programs appear in the *Graduate School Bulletin*.

The faculty is grouped below according to the orientation of their research and graduate programs.

*Animal and Veterinary Science Faculty:* Assistant Professor H. G. Gray, *chairperson*. Professors Donovan, Hinkson and Yates; Associate Professor Millar; Assistant Professors Gross and Nippo.

*Aquacultural Science and Pathology Faculty:* Professor T. L. Meade, *chairperson*. Professors Chang, Durfee, Smith, Wolke and Yates; Adjunct Professors Dardiri, Liu and Walsh.

*Community Planning and Area Development Faculty:* Professor T. D. Galloway, *director*. Professor Hammerschlag; Associate Professors Feld, Foster and Kupa; Assistant Professor Muniak; Adjunct Professors Barber, Hoffman, Johnson, Schneider and Thomas.

*Fisheries and Marine Technology Faculty:* Associate Professor C. W. Recksiek, *chairperson*. Assistant Professors Hillier, Stout and Wing; Instructors Gamache and Mortimer.

*Food Science, Technology, Nutrition and Dietetics Faculty:* Professor A. G. Rand, *chairperson*. Professors Bergan, Chichester, Constantinides, Cosgrove, Dymsza, T. Lee, Olney and Simpson; Associate Professors Barnett, Brown, Caldwell, Eshleman and Goshdigian; Assistant Professors Kaplan, C. Lee, Patel and Stauffer; Instructor Percival; Adjunct Professors Coduri, Darby, Howe, Miller, Silverman, Taylor and Zaroogian.

*Forest and Wildlife Management Faculty:* Associate Professor W. P. Gould, *chairperson*. Professors Brown and Patric; Associate Professor Golet; Assistant Professor Husband.

*Plant Pathology-Entomology Faculty:* Professor R. W. Traxler, *chairperson*. Professors Beckman, Jackson and Mueller; Associate Professor Englander; Assistant Professors Casagrande, LeBrun, Logan and D. Wallace; Adjunct Professors Kaplan and Tarzwell.

*Plant and Soil Science Faculty:* Professor J. J. McGuire, *chairperson*. Professors Hindle, Hull, Larmie, Skogley and Wakefield; Associate Professors Duff, Dunnington, Gough, Jagschitz, Krul, McKiel, Pearson, Shaw and Wilson. *Soil Science Section:* Professor G. T. Felbeck, *section head*. Professor

Roberts; Associate Professors Sheehan and Wright; Assistant Professor Gilbert.

*Resource Economics Faculty:* Associate Professor T. A. Grigalunas, *chairperson.* Professors Dirlam, Holmsen, Lampe, Owens, Rorholm and Spaulding; Associate Professors Gates, Sutinen, W. Wallace and Weaver; Assistant Professors Anderson, Crutchfield, Opaluch and Tyrell; Adjunct Assistant Professors Bockstael and Wang.

*Resource Development Education Faculty:* Professor D. E. McCreight, *director.* Professors Bromley, Dvorak and Shontz.

## Bachelor of Science Curriculum Requirements

All B.S. programs offered in the college require a minimum of 130 credits in three categories: general education (36 credits), free electives (12 credits), and program (82 credits).

The *general education* requirements provide exposure to English communications, mathematics, natural sciences, social sciences, letters, fine arts/literature, and foreign language/culture as directed by the University faculty, and must be selected from the approved lists of courses for the several categories.

A block of *free elective* courses is available in each program to give students the opportunity to explore areas of knowledge that may be unrelated to their principal program.

The *program* requirements include introductory professional courses, basic sciences, concentration courses, and supporting electives. Advisory materials for each program include a list of these courses. These are available upon request from the Office of Resident Instruction. Students, working closely with their faculty advisers, may shape their programs to accommodate general or specific needs and interests not represented by one of the options.

Students pursuing an *option* will encounter much more structure, particularly in the basic sciences and in the concentration requirements. The structure reflects specific admission requirements to graduate or professional programs on the one hand, and the professional requirements of an accrediting agency on the other. The additional requirements for the options are also available on request from the Office of Resident Instruction.

## Animal Science and Technology

This program is for students interested in applied animal science careers. Options are available to students interested in veterinary medicine, animal sciences, and in various phases of the equine or laboratory animal industries. Those students who intend to use their study in animal science as credentials for secondary school teaching should also enroll in this program.

The program requires a minimum of 7 credits in introductory animal science and genetics; 8 credits in zoology and botany; 8 credits in inorganic chemistry; and 3 credits in algebra/trigonometry. In addition, 9-12 credits shall be selected in basic sciences, 24 credits of concentration courses, and 26-29 credits of supporting electives approved for the program.

**Preveterinary Option.** This option prepares students for admission to veterinary schools offering the D.V.M. degree and requires a demonstrated capability in the basic science. Because admission requirements among schools are not totally uniform and are subject to change, students should determine specific requirements of the schools in which they are interested. Those who are not accepted for veterinary training will be well prepared to pursue graduate programs in animal physiology and health.

In addition to the requirements of the program, option students must complete the following basic science requirements: two-semester sequence in organic chemistry (8), biochemistry (3), microbiology (4), general physics (8), introductory calculus (3), and intermediate calculus or statistical methods in research (3). Three credits in animal anatomy and physiology are required in the concentration. The remaining credits shall be selected from the concentration courses and supporting electives approved for this option.

**Animal Science Option.** This option includes animal nutrition, physiology, genetics, and diseases. Students will normally emphasize one or more of these areas. A strong preparatory background in the basic sciences is needed. Students in this option seek employment in technical areas and/or continue their studies in specialized graduate programs.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (4 or 8), introductory calculus (3), microbiology (4). A course in animal anatomy and physiology is required in the concentration. The remaining credit requirements shall be selected from the concentration courses and supporting electives approved for this option.

**Equine Option.** This option includes both applied and scientific equine courses, and graduates are qualified to seek employment in a variety of areas in the equine industry.

In addition to the requirements of the program, option students must complete the following requirements in the concentration and supporting electives: biology of the horse (3), light horse management (3), anatomy and physiology (3), horse nutrition and feeding (3), animal diseases (3), pleasure horse (2), and feeds and feeding (3). The remaining credit requirements for the basic sciences, concentration, and supporting electives shall be selected from courses approved for the option.

**Laboratory Animal Option.** Research techniques and procedures for animal care are emphasized along with a strong background in the sciences. Students with this training and animal experience would be employed in research and teaching facilities as animal technicians, animal technologists, supervisors of animal attendants, and assistant research project leaders.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (4 or 8), introductory calculus (3), microbiology (4), and statistical methods (3). Six credits in animal management and three in animal anatomy and physiology are required in the concentration, and three credits of general nutrition

in the introductory college courses. The remaining credit requirements shall be selected from the concentration courses and supporting electives approved for this option.

**Animal Management Option.** This option provides a broad basis in animal science. A variety of scientific disciplines, together with their practical application to animal management is available. Students usually seek employment in animal agriculture or agri-industry related positions.

In addition to the requirements of the program, option students include 6 credits of animal management in the concentration. The remaining credit requirements in the basic sciences, concentration, and supporting electives must be selected from courses approved for this option.

## Aquaculture and Fishery Technology

Students who wish to prepare for professional or technical positions in aquaculture, marine, or fisheries-oriented occupations should enroll in this program. Students who demonstrate superior ability in the basic sciences and wish to continue their professional training in aquaculture or fishery technology should choose the appropriate option.

The program requires a minimum of 6 credits in natural resource conservation and resource economics; 6-8 credits in animal and plant biology; 4 credits in general chemistry; 4 additional credits in general or organic chemistry; and 3 credits in algebra/trigonometry. Biology and chemistry courses should be selected from the requirements of the chosen option. In addition, 9-12 credits in the basic sciences; 24 credits in concentration courses, and 30-35 credits of supporting electives should be selected from the courses approved for this program.

**Fishery Technology Option.** Students in this option prepare for advanced degree programs in marine science or for immediate employment in related government careers or in the commercial fishing industry.

In addition to the requirements of the program, option students complete introductory courses in commercial fisheries (3), food science (3), and fisheries economics (6). They must also complete 8 credits in organic chemistry, 6 credits in introductory and intermediate calculus, 4 credits in physics, 3 credits in statistical methods in research, and 3 credits in general ecology. The remaining credits shall be selected from the concentration courses and supporting electives approved for this option.

**Pre-Aquaculture Option.** Students who plan to prepare for graduate programs leading to research careers in aquaculture, or to specialized technical positions in the aquaculture industry should choose this option.

In addition to the requirements of the program, option students complete introductory courses in aquaculture (3) and general genetics (3). They must also include in their basic sciences 8 credits of organic chemistry, 6 credits in introductory and intermediate calculus, 3 credits in statistical methods in research, 4 credits in microbiology, 4 credits in physics, 3 credits in human physiology, and 3 credits in general ecology. The remaining credits shall be selected from the concentration courses and supporting electives approved for this option.

## Food Science and Nutrition

This program prepares for professional or technical careers in food science and in nutrition and dietetics. Students who demonstrate capability in the basic sciences and have professional interest in food science and technology or nutrition should choose those options. Those aspiring toward employment as dieticians should select the dietetics option.

The program requires a minimum of 6 credits in general nutrition and food science; 6-8 credits in animal and plant biology; 4 credits in general chemistry; 4 credits in the second general chemistry or organic chemistry; and 3 credits in algebra/trigonometry. Biology and chemistry courses should be selected from the requirements of the chosen option. In addition, 9-12 credits in the basic sciences, 24 credits of concentration courses, and 30-35 credits of supporting electives should be selected from courses approved for this program.

**Food Science and Technology Option.** Food science is the application of science and technology to the processing, preservation, and distribution of food. It is the key to converting raw food materials into a wide variety of preserved and processed foods. It deals with the processing of existing food supplies, developing new food products in order to feed the rapidly increasing world population, and improving the nutritional level of diets throughout the world. The option is officially recognized by the Institute of Food Technologists.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (8) or organic chemistry (3) and biochemistry (3); introductory calculus (3); microbiology (4); and general physics (4). The concentration includes courses in the nutritional evaluation of food processing (3), food analysis (4), food biochemistry (3), food processing (3), sensory evaluation or food chemistry lab (3), food engineering (4) and food microbiology (4). The supporting electives include a course in statistical methods in research, with the remainder selected from the restricted list of courses approved for this option.

**Dietetics Option.** Dietetics is the professional study of human nutrition to help people select nutritionally adequate diets throughout their life span. Careers include those related to food service systems and to nutritional care of individuals and groups. The option incorporates all of the minimum academic requirements of the American Dietetic Association. Graduates are eligible to apply for dietetic internships.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (4), biochemistry (3), microbiology (4) and human physiology (3). Concentration requirements include advanced food study (3), quantity food production (3), quantity food purchasing (3), food service management (3), advanced nutrition (3), nutrition and disease (3), educational methods and materials (3),

psychology of learning (3), and personnel administration (3). The supporting electives require the introductory course in food study, with the remainder selected from courses approved for this option.

**Nutritional Science Option.** This option deals with the action and interaction of nutrients and other substances in food in relation to health and disease. It studies primarily the body's requirements for nutrients, but also analyzes the social, economic, cultural, and psychological implications of food and eating.

In addition to the requirements of the program, option students must complete the following basic science requirements: microbiology (4), human physiology (3), and statistical methods (3). Concentration requirements include advanced nutrition (3) and nutrition and disease (3), with the remainder selected from the approved concentration courses. The supporting electives include the introduction to food supply (3) and must be selected from the courses approved for this option.

## Natural Resources

Students interested in the management and wise use of our natural resources should matriculate in this program. They may select one of the accompanying options, but those who are interested in a broadly based program, and particularly those who are planning to be certified as teachers of Natural Resources, should remain at the program level.

The program requires a minimum of 10 credits in the introductory courses in natural resource conservation, resource economics and soils; 6-8 credits in animal and plant biology; 4 credits in general chemistry, 4 additional credits in general or organic chemistry; and 3 credits in algebra/trigonometry. Biology and chemistry courses should be selected from the requirements of the chosen option. In addition, 9-12 credits of supporting electives must be selected from the courses approved for this program.

**Forest Science Option.** Students completing the requirements of this option are not prepared for professional work in the forestry field, but it does give them a solid base for a specialized program in forestry at the graduate level. Students planning to transfer to professional bachelor of forestry programs at other institutions should follow the requirements of this option.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (3-4), general physics (4-8), earth science (3-4), introductory calculus (3), intermediate calculus or computer science (3), and general ecology (3). Six credits in general forestry, 3 credits in general wildlife management, and 3 credits in field botany are required in the concentration. The remaining concentration courses and supporting electives shall be selected from courses approved for this option.

**Wildlife Biology and Management Option.** This option prepares students to meet the educational requirements for state and federal employment in the wildlife field, and for certification as a wildlife biologist by the National Wildlife Society. In addition, it provides an excellent preparation for graduate study in wildlife biology and management.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (3-4), general physics (4-8), atmospheric environment or physical geology (3-4), introductory calculus (3), and intermediate calculus or computer science (3). Six credits in general wildlife management, and 3 credits each in general forestry, field botany, animal physiology, and vertebrate biology are required in the concentration. The remaining 6 credits must be chosen from the concentration courses approved for this option. Three credits in statistical methods, 6 credits from upper level courses in zoology, and 3 credits from upper level courses in botany are required in the supporting electives, with the remainder selected from courses approved for this option.

**Resource Economics Option.** This option introduces students to the concepts and techniques of economics in the conservation and management of natural resources, and can prepare students for graduate study in a wide variety of applied areas.

In addition to the requirements of the program, option students must complete the following basic science requirements: introductory calculus (3) and general physics (4). Three credits in intermediate microeconomic theory are required in the concentration. The remaining concentration courses and supporting electives must be selected from courses approved for this option.

**Soil Conservation Option.** This option includes the administration, coordination, performance, and supervision of scientific work in soil, water, and resource conservation. It provides students with a strong background in the agricultural sciences and the necessary experience in soils required for entry into technical positions in soil conservation and land use.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (3-4), physical geology or geological earth science (4), introductory calculus (3), general physics (4-8), and general ecology (3). Twelve credits in the concentration must be selected from a specified list of seven approved courses, with the remainder selected from the entire option list. An introductory plant science course is required as a supporting elective, with the rest chosen from courses approved for this option.

**Soil Science Option.** This option is concerned with the soil system as a natural body and deals with the physical, chemical, and biological properties of soils, and their relationship with higher plants. Students in this option will have the background in soils, basic sciences, and mathematics needed for national certification as a soil scientist and for graduate study.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (3-4), quantitative analysis (4), physical geology (4), microbiology (4), introductory calculus (3), and physics (4-8). In the concentration, 9-12 credits shall be selected from courses in soil chemistry, soil biochemistry, soil genesis, soil microbiology and geomorphology. The

remaining concentration courses and supporting electives must be selected from the courses approved for the option, with the introductory plant science course being required.

## Plant Science and Technology

This program provides a strong background in the plant and related sciences. Students may prepare for careers in the more practical or technical aspects, or choose the basic and applied sciences needed for graduate study. Students interested in forage and food crops, and those planning to include teacher training should enroll in this program.

The program requires a minimum of 14 credits in introductory plant science, soils, plant protection, and general genetics; 8 credits in botany and zoology; 8 credits in general chemistry; and 3 credits in algebra/trigonometry. An additional 9-12 credits, including a course in plant physiology must be selected in basic sciences; 24 credits of concentration courses, and 22-25 credits of supporting electives from courses approved for the program.

**Landscape Design Option.** This option provides the students with professional skills for work in the public or private sectors as landscape managers, landscape designers, landscape designer/salesmen, or landscape designer/contractors. Those with superior academic performance can expect to qualify for admission into accredited programs in landscape architecture or in related programs in city and regional planning.

The requirements of the program apply to this option, except that the 9-12 credits of additional basic science are flexible. The 24-credit program required for the concentration is totally structured, and consists of the courses in design, construction, and plant materials. Courses in drawing, photography, surveying, and urban planning are required as supporting electives with the remainder selected from the courses approved for this option.

**Ornamental Horticulture Option.** This option prepares students for technical positions in ornamental horticulture and floriculture, and for graduate

study, teaching, or cooperative extension careers in this field.

In addition to the requirements of the program, option students must complete the following basic science requirements: plant physiology (3), organic chemistry (4), general physics (4-8). The remaining credits in concentration and directed electives must be chosen from courses approved for this option.

**Plant Protection Option.** This option offers a strong integrated background in the basic and applied aspects of plant health, and includes studies of the biological agents that affect the ecological and economic well-being of plants. It may lead to a terminal degree or be a preparation for graduate study in plant protection, plant pathology, entomology, weed science, and other disciplines in plant science.

In addition to the requirements of the program, option students must complete the following basic science requirements: plant physiology (3), plant anatomy (3), field botany, organic chemistry (8), microbiology (4) and statistical methods (3). The remaining concentration courses and supporting electives shall be selected from courses approved for this option.

**Turfgrass and Grounds Management Option.** This option is designed to prepare students for professional careers in this field. Graduates may be employed in sod production, in landscape construction, or as superintendents of golf courses, cemeteries, parks, or industrial, public, or military grounds. They are also employed in sales positions within supporting industries.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (4) and plant physiology (3). Concentration course requirements include 6 credits in turf management, 6 credits in entomology, 3 credits in plant pathology, weed science and soil conservation, and 4 credits in plant nutrition. Supporting electives must be selected from courses approved for this option.

## Urban Affairs

This program, Resource Development in the Urban Environment, is part of the interdisciplinary Urban Affairs Program (see page 12), and provides students with an understanding of how human and natural resources pertain to urban affairs. Training deals with problems related to natural resources in contemporary society.

Students, with the help of advisers, develop individual programs which meet the college and program requirements, and contain the flexibility needed to accommodate their varying interests.

All students are required to complete 3 credits of introductory work in Urban Affairs and 9 additional credits selected from courses approved for this level. Basic science requirements include animal and plant biology (6-8), general chemistry (4), additional chemistry, physics, or natural science (4), and algebra/trigonometry (3). In the concentration, the program perscribes three groups of courses and the minimum credits required for each group. Twelve of these credits shall apply to the Urban Affairs Program core requirement. Supporting electives shall be selected from three groups of courses developed for this program. Students are required to select 6-12 credits from each group.

## Teacher Certification

Students in the animal science, plant science, or natural resources programs who are interested in careers as secondary school teachers in agribusiness and natural resources may meet the Rhode Island Department of Education certification requirements with appropriate advisement.

In addition to 36 credits of resource development coursework, the following courses in the supporting electives may be included: EDC 102 (3), PSY 113 (3), EDC 312 (3), RDE 444 (3), EDC 484 (9-12), EDC 485 (3), RDE 486 (1-6), and 9 credits in related mechanics. Students should select a second adviser from Resource Development Education to provide the necessary technical assistance.

## Associate in Science Program

**Fisheries and Marine Technology.** This two-year program, leading to the Associate in Science degree, was designed in cooperation with commercial fishermen and federal and state agencies to provide a thorough training for students intending to enter any sphere of commercial fisheries or marine technology. The 72-credit curriculum provides fundamental knowledge of fishing vessel operation; equipment handling; navigation; fishing gear and methods; fishery business, economics, marketing, and legislation.

Work on board ship, in the net loft, in seamanship and navigation laboratories, engineering laboratory, and in marine electronics and vessel technology laboratories make up a good part of the credit hours. Formal classes on the campus provide a background in the social, biological, and physical sciences, as well as the professional subjects of navigation, seamanship, fishing gear and methods, engineering, marine electronics, and vessel technology. Laboratory work is conducted on board the training vessel and in the waterfront laboratories.

This program is available to students in all New England states under the New England Regional Program sponsored by NEBHE (see page 18).

*First semester: 17 credits*

FMT 013 (3), 020 (1), 101 (3), 118 (3), MTH 109 (4), REN 136 (3).

*Second semester: 17 credits*

FMT 014 (1), 110 (4), 121 (3), 131 (3), SPE 101 or PHL 101 (3), WRT 101 (3).

*Third semester: 19 credits*

FMT 241 (4), 261 (4), 281 (4), 293 (1), 351 (3), REN 236 (3).

*Fourth semester: 19 credits*

FMT 222 (2), 223 (1), 235 (2), 242 (4), 371 (3), 382 (4), 393 (3).

# Courses of Instruction

## Course Codes

ACC - Accounting
ADE - Adult and Extension Education
AVS - Animal and Veterinary Science
APG - Anthropology
ASP - Aquacultural Science and Pathology
ART - Art
AST - Astronomy
BGS - Bachelor of General Studies
BCP - Biochemistry and Biophysics
BIO - Biology
BST - Black Studies
BOT - Botany
BED - Business Education
BSL - Business Law
CHE - Chemical Engineering
CHM - Chemistry
CVE - Civil and Environmental Engineering
CLA - Classics
CLS - Comparative Literature Studies
CMS - Communication Skills
CPL - Community Planning
CSC - Computer Science
CNS - Consumer Studies
DHY - Dental Hygiene
ESC - Earth Science
ECN - Economics
EDC - Education
ELE - Electrical Engineering
EGR - Engineering
ENG - English
EHS - Environmental Health Science
EST - Experimental Statistics
FIN - Finance
FMT - Fisheries and Marine Technology
FSN - Food Science and Technology, Nutrition and Dietetics
FLF - Foreign Language Film
FOR - Forest and Wildlife Management
FRN - French
GMA - Geography and Marine Affairs
GEL - Geology
GER - German
GRK - Greek
HLT - Health
HBW - Hebrew
HIS - History
HEC - Home Economics
HED - Home Economics Education
HPR - Honors Program
HCF - Human Development, Counseling, and Family Studies
HSS - Human Science and Services
IDE - Industrial Engineering
INS - Insurance
ITL - Italian
JOR - Journalism
LAN - Languages
LAT - Latin
LAS - Latin American Studies
LIB - Library
LSC - Library Science
LIN - Linguistics
MGT - Management
MGS - Management Science
MKT - Marketing
MTH - Mathematics
MCE - Mechanical Engineering and Applied Mechanics
MTC - Medical Technology
MCH - Medicinal Chemistry
MIC - Microbiology
MSC - Military Science
MUS - Music
NES - New England Studies
NUE - Nuclear Engineering
NUR - Nursing
OCE - Ocean Engineering
OCG - Oceanography
PCG - Pharmacognosy
PCL - Pharmacology and Toxicology
PHC - Pharmacy
PAD - Pharmacy Administration
PHL - Philosophy
PED - Physical Education
PHY - Physics
PLP - Plant Pathology-Entomology
PLS - Plant Science
PSC - Political Science
POR - Portuguese
PSY - Psychology
RCR - Recreation
RDV - Resource Development
RDE - Resource Development Education
REN - Resource Economics
REM - Resource Mechanics
RTH - Respiratory Therapy
RUS - Russian
SWF - Social Welfare
SOC - Sociology
SLS - Soil Science
SPA - Spanish
SPE - Speech Communication
TXC - Textiles, Clothing, and Related Art
THE - Theatre
UYA - University Year for Action Internship Program
URB - Urban Affairs
WMS - Women's Studies
WRT - Writing
ZOO - Zoology

All permanent undergraduate courses offered at the University of Rhode Island are listed on the following pages by subject in alphabetical order. If any subject cannot be located readily, refer to the index. Courses numbered 001 to 099 are pre-freshman and special undergraduate courses and do not carry bachelor's degree credit. Those numbered 100 to 299 are lower division undergraduate courses and those numbered 300 to 399 are upper division undergraduate courses. The 400-level courses are generally limited to juniors and seniors majoring in a field, but open to other advanced undergraduates and to graduate students with permission.

The 500-level courses, listed in this bulletin by title line only, are graduate courses with a bachelor's degree usually prerequisite, but qualified seniors and honors students are admitted with permission. For a full description of these and courses at the 600- and 900- levels, see the *Graduate School Bulletin*.

Courses with two numbers, e.g. ACC 201, 202, indicate a year's sequence and the first course is either a prerequisite for the second or at least the two cannot be taken in reverse order without special permission. If a course is also offered by another department, this information appears following the course number. The roman numeral indicates the semester the course will be offered, SS means the course is offered during the Summer Session, the arabic numeral indicates the credit hours. Distribution of class hours each week is in parentheses. S/U credit signifies a course in which only satisfactory or unsatisfactory grades are given. The instructor's name follows the course description. Courses which meet the General Education requirements are designated with a letter in parentheses, indicating the appropriate group, as follows:

(A) - Fine Arts and Literature
(F) - Foreign Language and Culture
(L) - Letters
(C) - English Communication (General)
(Cw) - English Communication (Written)
(M) - Mathematics
(N) - Natural Sciences
(S) - Social Sciences

The schedule of courses is issued by the Registrar immediately before the preregistration period for each semester and again just before registration day. The schedule of courses lists the specific courses to be offered that semester with the time of meeting, location, and instructor assigned for the section.

## Accounting (ACC)

*Chairperson:* Professor Vangermeersch

**201, 202 Elementary Accounting** *(I and II, 3 each)* 201: Basic functions and principles of accounting. 202: Partnerships, corporations, manufacturing accounts, and specialized areas. *(Lec. 3)* Staff

**305 Accounting Principles** *(I and II, 3)* Basic principles and procedures, emphasis on their application to industrial administration of business enterprises. *(Lec. 3) Open to non-business students only. Not open to students who have taken or are required to take 201.* Staff

**311, 312 Intermediate Accounting** *(I and II, 3 each)* 311: Theoretical aspects of accounting principles, emphasis on current and fixed assets and the corporate structure. 312: Continuation including investments, liabilities, financial statements, application of funds, cash flow, and price-level impacts. *(Lec. 3) Pre: 202.* Staff

**321 Cost Accounting** *(I, 3)* Cost systems including job order, process, and standard costs with emphasis on the managerial control of costs. *(Lec. 3) Pre: 202.* Staff

**343 A General Survey of the Federal Income Tax** *(II, 3)* Taxation for students with little or no previous work in accounting or business administration, emphasis on those aspects of taxation which are helpful to the individual. *(Lec. 3) Not open to accounting majors.* Staff

**371, 372 Directed Study in Accounting** *(I and II, 1-3 each)* Advanced work under the supervision of a member of the staff and arranged to suit the individual requirements of the student. *(Lec. 1-3) Pre: permission of instructor.* Staff

**413 Contemporary Accounting Issues** *(I, 3)* Interpretation of financial data. Case studies of current accounting theory in selected annual corporate reports. *Pre: 312 or permission of instructor. Not for graduate program credit.* Staff

**415 Accounting-Computer Systems** *(II, 3)* Accounting information systems and use of the computer for decision-making; emphasis on sources of information and employment of analytical tools in solving accounting problems. *(Lec. 3) Pre: 312, 321, or permission of instructor.* Staff

**422 Advanced Cost Accounting** *(II, 3)* Extension of managerial cost accounting, budgeting, and relationship of accounting to other quantitative fields. *(Lec. 3) Pre: 321.* Staff

**431 Advanced Accounting** *(II, 3)* Theory applicable to partnerships, installment sales, insurance, consignments, receiverships, estates and trusts, consolidated statements, and specialized accounting subjects. *(Lec. 3) Pre: 312.* Staff

**443 Federal Tax Accounting** *(I, 3)* Federal laws, regulations, and other authorities affecting taxation of individuals. *(Lec. 3) Pre: 202.* Staff

**461 Auditing** *(II, 3)* Auditing standards, procedures, programs, working papers, and internal control. *(Lec. 3) Pre: 312.* Staff

**510 Financial Accounting** *(I and II, 3)*
**513 Accounting Systems** *(I, 3)*
**535 Advanced Problems in Accounting** *(II, 3)*
**544 Topics in Federal Taxation** *(II, 3)*
**548 Accounting for Noncommercial Entities** *(II, 3)*

## Adult and Extension Education (ADE)

*Program Director:* Associate Professor McCreight

**487 The Cooperative Extension Service in Today's Society** *(II, 3)* Comprehensive look at the Cooperative Extension Service including its history, structure, philosophy, purpose, goals and objectives, program planning process, changing clientele, funding, methods, and procedures. Role of the modern Cooperative Extension Service in the United States. *(Lec. 3)* Bromley

**488 Methods and Materials for Adult and Extension Education** *(II, 3)* Techniques utilized in working with large and small groups. Hardware and software used effectively in adult and extension education identified and demonstrated. Communications in extension education studied in depth. *(Lec. 3)* Jones

**489 Utilization of Paraprofessionals in Adult and Extension Education** *(I, 3)* Training paraprofessionals and others working with auxiliary personnel. Logs, videotapes, reports, role playing, and other material on paraprofessional activities analyzed. *(Lec. 3)* Jones

**491, 492 Special Problems in Adult Education** *(I and II, 1-3 each)* Specialized problems in adult and extension education. Seminars or supervised individual projects. *(Lec. or Lab.) Pre: permission of instructor.* Staff

**575 Adult and Cooperative Extension Programming for Older Adults** *(I, 3)*

## Animal and Veterinary Science (AVS)

*Chairperson:* Assistant Professor Gray

**101 Introduction to Animal Science** *(I, 3)* Animal industry's role in world and national economy; inheritance, growth, physiology, nutrition, and diseases of

domestic animals and poultry; geographic distribution and marketing of animal products. *(Lec. 3)* Nippo (N)

**102 Introduction to Animal Science Laboratory** *(I, 1)* Laboratory and demonstrations of principles of the animal industries. *(Lab. 2) Pre: 101. May be taken concurrently with 101.* Millar and Staff

**201 Man and His Animals** *(II, 3)* Study of the interrelationships between man and domestic animals with emphasis on pets; including breeds of dogs and cats, pet nutrition, behavior, breeding, and areas of topical interest. *(Lec. 3)* Nippo

**212 Feeds and Feeding** *(I, 3)* Principles and practices of feeding farm animals, nutrient requirements, physiology of digestion, identification and comparative value of feeds, computer calculation of rations for livestock. *(Lec. 2, Lab. 2)* Millar

**252 The Pleasure Horse** *(I and II, 2)* Principles of light horse management and horsemanship, including appreciation and use. *(Lec. 1, Lab. 2) Open to all students interested in the pleasure horse.* Staff

**301, 302 Seminar in Animal and Veterinary Science** *(I and II, 1)* Readings, reports, lectures, and discussions on scientific topics in animal and veterinary science. Subject matter adapted to student and faculty interest. *Pre: junior or senior standing.* Nippo

**313 Biology of the Horse** *(II, 3)* Study of the horse, including its history, structure, and body functions. Emphasis on function of bones, teeth, muscles, feet, and legs, digestive and reproductive systems. *(Lec. 3)* Hinkson

**323 Animal Management I** *(I, 3)* Principles of care and management of domesticated ruminant animals including dairy cattle, beef cattle, sheep, and goats. Emphasis on the production methods of the animal industries. Participation in field trips required. Gray

**324 Animal Management II** *(II, 3)* Principles of the care and management of domesticated monogastric animals including swine and poultry. Emphasis will be given to modern production methods. Participation in field trips required. Millar and Gross

**331 Anatomy and Physiology** *(I, 3)* Fundamentals of anatomy and physiology of domesticated animals. *(Lec. 3) Pre: MIC 201 or 211, ZOO 111; junior standing.* Hinkson, Gray and Nippo

**343 Behavior of Animals that Serve Man** *(II, 3)* Examination of the basis for, and exhibition and control of behavioral patterns of domestic animals. *(Lec. 3) Pre: 101 or permission of instructor.* Nippo

**356 Light Horse Management** *(II, 3)* In-depth study of accepted management and care practices, nutrition, and health of the light horse. *(Lec. 2, Lab. 2) Pre: 252 or permission of instructor.* Hinkson

**361 Game Bird Propagation and Management** *(I, 3)* Principles and techniques of game bird propagation, hatchery operation, confinement rearing, nutrition, disease problems, and shooting preserve management. *(Lec. 2, Lab. 2) Pre: BIO 102 or ZOO 111.* Millar

**372 Introductory Endocrinology** *(I, 3)* Morphology and physiology of endocrine glands. Roles of hormones in regulation of body processes. Discussion of all endocrine organs and relationship of endocrine and nervous systems. Emphasis on domesticated animals and fowl. *(Lec. 3) Pre: BIO 102 or ZOO 111.* Gray

**382 Poultry Business** *(II, 3)* Poultry enterprises, methods of organization, financing, business management; emphasis on current developments within the industry affecting business decisions. *(Lec. 2, Lab. 2) In alternate years, next offered 1981-82.* Millar

**399 Animal Science Internship** *(I and II, 1-6)* Options in various professional experience programs involving the animal and veterinary sciences. May be repeated to a maximum of six credits. *Pre: permission of department. S/U credit.* Staff

**412 Animal Nutrition** *(II, 3)* Principles of animal nutrition, metabolism of carbohydrates, proteins, and fats; mineral and vitamin requirements; nutritive requirements for maintenance, growth, reproduction, lactation, and work. *(Lec. 3) Pre: 212, organic chemisty, junior standing.* Henderson

**415 Physiology of Lactation** *(I, 3)* Endocrine control, milk precursors, physiology of milk production, and anatomy of mammary system including vascular, lymphatic and nervous system. *(Lec. 3) Pre: junior standing. In alternate years, next offered 1982-83.* Hinkson

**432 Biology of the Fowl** *(II, 3)* Anatomy and physiology of the developing and adult domestic fowl, emphasizing characteristics of greatest economic interest, embryology, meat and egg production. Physiological responses to environmental conditions and their influences on commercial production. *(Lec. 2, Lab. 2) Pre: ZOO 111 or BIO 102, 1 semester of organic chemistry. In alternate years, next offered 1982-83.* Durfee

**451 Horse Nutrition and Feeding** *(II, 3)* Nutritional needs of the horse for growth, maintenance, lactation, breeding, and work will be discussed. Also nutrition sources and feeding programs. *(Lec. 3) Pre: 212 and one semester of organic chemistry.* Hinkson

**461 Laboratory Animal Technology** *(I, 3)* Selection, breeding, and management of laboratory animals. *(Lec. 2 Lab. 2) Pre: ZOO 111 or BIO 102.* Gray

**462 Laboratory Animal Techniques II** *(II, 3)* Laboratory animal applications in clinical studies; drug testing and research in nutrition, physiology, endocrinology, and other selected topics. *(Lec. 1, Lab. 4) Pre: 461 or permission of instructor.* Gray and Nippo

**472 Physiology of Reproduction** *(II, 3)* Anatomy and physiology of reproduction, emphasis on domestic farm animals and fowl. Endocrine aspect of reproduction. *(Lec. 2, Lab. 2) Pre: ZOO 111 and permission of instructor.* Gray

**474 Population Genetics in Animal Breeding** *(II, 3)* Genetic structure of populations, conditions of equilibrium, and gene frequency changes. Inbreeding and other mating systems. Criteria for selection and comparison of breeding systems. *(Lec. 3) Pre: 352 or BOT 352. In alternate years, next offered 1982-83.* L. Smith

**491, 492 Special Projects** *(I and II, 1-3 each)* Work which meets individual needs of students in aquaculture, animal, poultry, and food science. *(Lec. and/or Lab. according to nature of project) Pre: permission of department.* Staff

**501, 502 Graduate Seminar** *(I and II, 1 each)*
**512 Advanced Animal Nutrition** *(II, 3)*
**580 or (ELE 580) Experimental Laboratory Techniques** *(II, 3)*
**591, 592 Research Problems** *(I and II, 3 each)*

## Anthropology (APG)

*Chairperson:* Associate Professor Gelles (Sociology and Anthropology)

**200 Language and Culture** *(I or II, 3)* Cross-cultural survey of the interaction of culture and language. Introduction to various fields of linguistic research emphasizing descriptive and semantic investigations. Linguistic studies used as illustrative material. *(Lec. 3)* Pollnac (S)

**201 Human Origins** *(I and II, 3)* The biocultural evolution of humans; review of the fossil record. *(Lec. 3)* Loy (N)

**202 The Prehistoric Ages of Man** *(I and II, 3)* Archaeological perspectives on human biological and cultural development from the Old Stone Age to the Iron Age. Emphasizes prehistoric lifeways, emergence of food production, earliest Old and New World civilizations. *(Lec. 3)* Turnbaugh (S)

**203 Cultural Anthropology** *(I and II, 3)* Anthropological approaches to the study of people and cultures around the world. *(Lec. 3)* Staff (S)

**301 Comparative Primate Morphology** *(I, 3)* Survey of the form and structure of living and fossil primates, including humans. Examination of correlations between

morphology and locomotor pattern, feeding ecology, and habitat preference. Laboratory study of primate material. *(Lec. 2, Lab. 2) Pre: 201 or permission of instructor.* Loy

**303 New World Prehistory** *(I or II, 3)* Reconstruction of American Indian culture history from earliest times to the period of European discovery and colonization, using archaeological evidence and perspectives. *(Lec. 3)* Turnbaugh (F)

**305 Peoples of East Asia** *(I or II, 3)* Survey of traditional and contemporary culture and society in the three main countries (China, Korea, and Japan) of the East Asia culture area. *(Lec. 3) Pre: 203 or permission of instructor.* Staff

**309 Anthropology of Religion** *(I or II, 3)* Religious systems of selected peoples around the world; examination of theories concerning the origins, functions, and natures of these religions. *(Lec. 3) Pre: 203 or permission of instructor.* Staff

**311 Native North Americans** *(I or II, 3)* Survey of selected North American Indian groups from before European contact to the present. Modern reservation life; influence of the federal government on Indian life. *(Lec. 3) Pre: 203 or permission of instructor.* Lynch (F)

**313 Ethnology of Africa** *(I or II, 3)* Studies of Africa's peoples and cultures from prehistoric times to the present. *(Lec. 3) Pre: 203 or permission of instructor.* Pollnac (F)

**315 Cultures and Societies of Latin America** *(I or II, 3)* Contemporary cultures and societies, emphasis on adjustment of the people to modern social and economic changes. *(Lec. 3) Pre: 203 or permission of instructor.* Poggie (F)

**317 Archaeological Method and Theory** *(I or II, 3)* Problems of collection and interpretation of data, emphasizing nature of archaeological investigation, classification, dating, reconstruction of social contexts. Laboratory demonstrations. *(Lec. 3) In alternate years, next offered 1982-83.* Turnbaugh

**319 Cultural Behavior and Environment** *(I or II, 3)* Cultural adaptations made by traditional and industrial societies to natural and human environments using examples from prehistory and ethnography. *(Lec. 3) Pre: 201, 202, or 203 or permission of instructor. In alternate years, next offered 1981-82.* Turnbaugh (S)

**321 Kinship and Marriage** *(I or II, 3)* Examination of the role of kinship, marriage, and ancestry in the social organization of societies around the world. *(Lec. 3) Pre: 203.* Lynch

**322 Anthropology of Modernization** *(I or II, 3)* Patterns and processes of contemporary social and cultural change among traditional people. *(Lec. 3) Pre: 203 or permission of instructor.* Poggie

**323 Political Anthropology** *(I or II, 3)* Evolution of political systems from tribe to state; political conflict, authority, and power in selected societies around the world. *(Lec. 3) Pre: 203 or permission of instructor.* Lynch

**324 Peasant Societies** *(I or II, 3)* Evolutionary development and sociocultural characteristics of the world's peasantry. Case studies of adaptations of peasants to a variety of ecological settings. *(Lec. 3) Pre: 203 or permission of instructor.* Poggie

**326 Anthropology of Law** *(I or II, 3)* Examination of the range of procedures for handling disputes in selected societies around the world. Emphasis on relation of law to its cultural context. *(Lec. 3) Pre: 203 or permission of instructor.* Lynch

**401 History of Anthropological Theory** *(I or II, 3)* Theory from the sixteenth century to the present; readings from Tylor, Morgan, Boas, Sapir, Kroeber, Benedict, Malinowski and Radcliffe-Brown. *(Lec. 3) Pre: 203 and two 300-level courses in anthropology or permission of department. In alternate years, next offered in 1982-83.* Staff

**402 Methods of Anthropological Inquiry** *(I or II, 3)* Logic, techniques, and problems in obtaining true information in anthropological inquiry. Problems from anthropological field work and use of cross-cultural data. *(Lec. 3) Pre: 203 and two 300-level courses in anthropology or permission of department. In alternate years, next offered in 1981-82.* Poggie

**405 Psychological Anthropology** *(I or II, 3)* Study of human behavior in different cultures employing psychological concepts and theories. *(Lec. 3) Pre: 203 and 6 credits of 300-level courses in anthropology or permission of department.* Pollnac

**407 Economic Anthropology** *(I or II, 3)* Introduction to theoretical concepts and methodologies used in analysis of tribal and peasant economies, emphasis on case studies from the anthropological literature. *(Lec. 3) Pre: 203.* Staff

**409 Anthropological Linguistics** *(I or II, 3)* Use of the linguistic model in the analysis of human cultural products, including folk narrative and kinship systems. Emphasis on techniques used in the formal analysis of both verbal and non-verbal behavior. *(Lec. 3) Pre: 200 or LIN 201.* Pollnac

**411 Peoples of the Sea** *(I, 3)* Examination of human sociocultural adaptation to the seas. *(Lec. 3) Pre: 203 or permission of instructor.* Pollnac and Poggie

**412 Primate Behavior and Organization** *(I or II, 3)* Investigation of the naturalistic behavior and organization of nonhuman primates, and the relationship of primate data to anthropology. *(Lec. 3) Pre: 201 or permission of instructor.* Loy

**470 Problems in Anthropology** *(I and II, 3)* Staff-guided study and research, seminar, or individual program. *(Lec. 3 or Lab. 6) Pre: permission of department.* Staff

## Aquacultural Science and Pathology (ASP)

*Chairperson:* Professor Meade

**281 Introduction to Aquaculture** *(I, 3)* Aquaculture, its contribution to world food supply, methods of production, environmental and ecological considerations, cultural practices employed for selected species, selective breeding, feeding, disease, processing and marketing. *(Lec. 3) Pre: BIO 102 or ZOO 111, or permission of instructor.* Durfee

**332 Animal Diseases** *(II, 3)* Specific diseases of mammals. *(Lec. 3) Pre: 331.* Chang

**352 General Genetics** *(I, 3)* Introduction to genetic principles and concepts with applications and implications of these concepts to man and other species. *(Lec. 3) Pre: BOT 111, or BIO 101 or 102 or ZOO 111. Not open to students who have taken BOT 352.* Smith

**354 Genetics Laboratory** *(I, 2)* Basic principles of heredity demonstrated with *Drosophila, Coturnix,* and plants. *(Lab. 4) Pre: 352 or BOT 352, may be taken concurrently with 352. Not open to students who have taken BOT 354 or 454.* Smith

**401 Introduction to Pathology** *(II, 3)* General and systemic pathology including cellular changes, etiology and pathogenesis of inflammation, metabolic and neoplastic processes. *(Lec. 3) Pre: MIC 201 or 211, ZOO 242, and/or equivalent; junior standing, or permission of instructor.* Wolke

**452 (or FMT 452) Industrial Fishery Technology** *(I, 3)* Utilization of industrial fish, production of fish meal, fish oil, condensed fish solubles, fish protein concentrate; handling, packaging, storage, and transportation. Nutritive quality, market value, and demand relationships for fish proteins. *(Lec. 2, Lab. 3) Pre: permission of instructor.* Meade

**461 Laboratory Animal Technology**
See Animal and Veterinary Science 461.

**476 The Genetics of Fish** *(II, 2)* Modes of inheritance found in fish including chromosome numbers and sex determination, methods of selection, and mating systems used in the development of strains for aquaculture. *(Lec. 2) Pre: 352. In alternate years, next offered spring 1981-82.* L. Smith

**483 Salmonid Aquaculture** *(I, 3)* Principles of salmonid aquaculture, including culturing, spawning, incubation, feed formulation and feeding, disease control, genetics, systems management, harvesting, and

transport. *(Lec. 2, Lab. 2) Pre: 281 or equivalent, or permission of instructor.* Meade

**501, 502 Seminar** *(I and II, 1 each)*
**532 Experiment Design** *(II, 3)*
**534 Animal Virology** *(II, 3)*
**536 Virology Laboratory** *(II, 2)*
**538 Epidemiology of Viral and Rickettsial Diseases** *(II, 2)*
**555, 556 Pathology Rotation** *(I, II, 3 each)*
**584 Advanced Aquaculture Systems** *(II, 3)*
**586 Fish Nutrition** *(I, 3)*
**591, 592, Special Projects** *(I and II, 1-3 each)*

## Art (ART)

*Chairperson:* Professor Fraenkel

**101 Two-dimensional Studio I** *(I and II, 3)* Exploration of principles of visual organization relating primarily to formulations on the two-dimensional surface by means of fundamental studies and assignments in studio techniques. *(Studio 6)* Staff (A)

**103 Three-dimensional Studio** *(I and II, 3)* Introduction to problems in three-dimensional organization and figure modeling in clay or plaster, observations from the live model, discussion and application of various molds and casting techniques. *(Studio 6)* Staff (A)

**120 Introduction to Art** *(I and II, 3)* Fundamental principles of the visual arts, evolution of styles and conceptions through the ages in different forms of creative expression. *(Lec. 3) May not be taken after 251, 252 for credit.* Holmes (A)

**203 Color** *(II, 3)* Visual perception of color and manipulation of light as they pertain to two- or three- dimensional formulations. *(Studio 6)* Leete (A)

**207 Drawing I** *(I and II, 3)* Visual perception and observation, using nature structures, drawing from live models, still life and landscape; exercises in basic drawing techniques and principles. *(Studio 6)* Staff (A)

**208 Drawing II** *(I and II, 3)* Advanced practice in graphic conceptions; exercises in spatial problems, organizing relationships of abstract forms and structures; advanced drawing media. *(Studio 6) Pre: 207.* Staff

**213 Photography I** *(I and II, 3)* Introduction to photography, exploration of related techniques using light sensitive materials. *(Studio 6) may be repeated once with permission of instructor. Pre: permission of instructor.* Parker

**215 Filmmaking I** *(I and II, 3)* Introduction to basic filmmaking technique and theory. Emphasis on film as a visual art. Required projects and readings. *(Studio 6) may be repeated once with permission of instructor.* Keller (A)

**221 Two-dimensional Studio II** *(I and II, 3)* Techniques of painting, utilizing as reference the natural and manmade environments. Traditional and contemporary materials. *(Studio 6) Pre: 101 and 207.* Staff

**231 Printmaking I** *(I and II, 3)* Introduction to intaglio and lithographic processes, with an emphasis on image development and workshop procedures. *(Studio 6) Pre: 101 or 207 or permission of instructor.* Cordes (A)

**233 Relief Printing and Typography I** *(I and II, 3)* Introduction to basic elements of graphic design; letter forms, their relationship to the page and to the image. Various traditional and modern reproduction techniques, workshop practice in typesetting and layout *(Studio 6) Pre: 101 or permission of department.* Richman (A)

**243 Three-dimensional Studio II** *(I and II, 3)* Formation of three-dimensional forms employing basic sculptural materials and techniques. Basic media, emphasis on form, material, and structural means in studio practice. *(Studio 6) Pre: 103 or permission of instructor.* Staff

**251 Introduction to History of Art** *(I and II, 3)* Stylistic development of architecture, sculpture, and painting from prehistory through the Middle Ages. *(Lec. 3)* Staff (A)

**252 Introduction to History of Art** *(I and II, 3)* Stylistic development of architecture, sculpture and painting from the early Renaissance to the present. *(Lec. 3)* Staff (A)

**263 American Art** *(I or II, 3)* Painting, sculpture and architecture from their origins in the seventeenth century to the present; emphasis on the nineteenth century. *(Lec. 3)* Onorato

**273 African Art** *(I, 3)* Introduction to tribal art of Africa. *(Lec. 3)* Staff

**280 Introductory Topics in European and American Art** *(I or II, 3)* Consideration of the history of European and American art through surveys of particular periods or themes. Topics to be announced. *(Lec. 3) May be repeated twice with permission of instructor. Spring 1982: Impressionism and Post-Impressionism.* Holmes (A)

**283 Topics in Non-European Art** *(I or II, 3)* Selected topics in non-European art other than African. Topics to be announced. *(Lec. 3) May be repeated once with permission of instructor.* Staff

**284 Introductory Topics in Architectural History** *(I or II, 3)* Consideration of the history of architecture and city planning through surveys of selected periods and themes. *(Lec. 3) May be repeated once with permission of instructor. May be taken once for general education credit. Fall 1981: Field Course in New England Architecture.* Onorato; *Spring 1982: Ancient Cities and Town Planning.* Kampen (A)

**285 Women in Art** *(I, 3)* Survey of images of women throughout the history of art in Europe and America; investigation of the roles of women as patrons and artists in art history. *(Lec. 3)* Kampen

**301, 302 Projects in Studio I, II** *(I and II, 3 each)* Studio projects under guidance of instructor selected by student. The student may select another instructor for 302. *Pre: enrollment in Honors Colloquium and/or permission of chairperson and instructor.* Staff

**309, 310 Drawing III and IV** *(I and II, 3 each) 309:* Further problems, emphasis on independent investigation in analysis, planning, and supportive notation. *310:* Continuation. *(Studio 6) Pre: 208 or permission of instructor for 309; 309 for 310.* Staff

**314 Photography II** *(I and II, 3)* Continuation of 213. *(Studio 6) may be repeated with permission of instructor. Pre: 213.* Parker

**316 Filmmaking II** *(I and II, 3)* Continuation of 215 with added emphasis on sound. Required projects and reading. *(Studio 6) Pre: 215. May be repeated with permission of instructor.* Keller

**322 Two-dimensional Studio III** *(I and II, 3)* Continuation of 221. *(Studio 6) Pre: 221. May be repeated with permission of instructor.* Staff

**332 Printmaking II** *(I and II, 3)* Continuation of 231 with introduction to color lithography. Contemporary viewpoints and their relationship to traditional printmaking, with emphasis on individual image development. *(Studio 6) Pre: 231.* Cordes

**334 Relief Printing and Typography II** *(I and II, 3)* Continuation of 233. Applications of previous studies to experimental workshop assignments leading to production of book pages, folders, posters, and other visual material incorporating type and print in a contemporary idiom. *(Studio 6) May be repeated with permission of instructor. Pre: 233 or permission of department.* Richman

**337 Printmaking III** *(I and II, 3)* Semi-independent work in printmaking media. Introduction of aluminum plate and photolithography. *(Studio 6) Pre: 332.* Cordes

**338 Printmaking IV** *(I and II, 3)* Emphasis on individual development in specific printmaking media. Critical evaluation of visual development. *(Studio 6) Pre: 337.* Cordes

**344 Three-dimensional Studio III** *(I and II, 3)* Continuation of 243. *(Studio 6) May be repeated with permission of instructor. Pre: 243 or permission of instructor.* Staff

**354 The Art of Greece and Rome** *(I, 3)* Developments in architecture, painting, and sculpture in Greece and Rome from 800 B.C. to 400 A.D. Brief analysis of the art of the Aegean from 2500 to 1500 B.C. *(Lec. 3) Pre: 251 or permission of department.* Kampen (F)

**356 Medieval Art** *(II, 3)* Painting, sculpture, architecture, and minor arts of the Middle Ages from 500 to 1400 in Western Europe. *(Lec. 3) Pre: 251 or permission of department.* Kampen (F)

**359 Baroque Art** *(II, 3)* Developments in painting, sculpture, and architecture in Italy and northern Europe from 1600 to 1750. *(Lec. 3) Pre: 251, 252 or permission of department.* (A) (F)

**361 Modern Art** *(I or II, 3)* Main developments in painting, sculpture and architecture internationally during the nineteenth century. *(Lec. 3) Pre: 252 or permission of department. In alternate years. Next offered spring 1982.* Holmes (F)

**362 Modern Art** *(I or II, 3)* Main developments in painting, sculpture and architecture internationally during the twentieth century. *(Lec. 3) Pre: 252 or permission of department. In alternate years; next offered fall 1982.* Onorato (F)

**365 Renaissance Art** *(I, 3)* Painting, sculpture, and architecture of Italy and northern Europe from 1400-1600. *(Lec. 3) Pre: 251 or 252 or permission of department.* Roworth

**371, 372 Projects in Art History I, II** *(I and II, 3 each)* Directed study in art history under guidance of instructor selected by student. The student may select another instructor for 372. *Pre: enrollment in Honors Colloquium and/or permission of chairperson and instructor; 371 for 372.* Staff

**374 Topics in Film and Photography** *(II, 3)* Selected topics or periods in the history of film and photography. Topics to be announced. *(Lec. 3) Pre: permission of department. May be repeated twice with permission of instructor. May be taken once for general education credit. Spring 1982: History of the Modern Cinema – 1945 to Present.* Keller (A)

**403, 404 Studio-Seminar I and II** *(I and II, 3 each)* Assigned visual investigations and independent projects under the guidance of instructors. Periodic critiques and discussion of work of all participants. *(Studio 6) Pre: 12 credits in studio for 403; 403 for 404.* Staff

**405, 406 Studio-Seminar III and IV** *(I and II, 3 each)* Intensive self-directed work under guidance of instructors. Periodic critiques and discussions of work of all participants. *(Studio 6) Pre: 24 credits in studio for 405; 405 for 406.* Staff

**461 Topics in Methods, Theory and Criticism** *(I or II, 3)* Art history methods or selected topics in the theory and criticism of art. Topics to be announced. *(Lec. 3) Pre: permission of department. May be repeated once with permission of instructor. Fall 1981: Issues in Art Theory.* Holmes

**462 Contemporary Art Seminar: Art Since 1945** *(II, 3)* Analysis of contemporary work and its relation to earlier movements. *(Lec. 3) Pre: 362 or permission of department.* Onorato

**469, 470 Art History — Senior Projects** *(I and II, 3-6 each)* Intensive, independent work on a project determined after consultation with the student's project adviser. *(Lec. 3-6) Pre: permission of department.* Staff

**480 Advanced Topics in European and American Art** *(I or II, 3)* Consideration of the history of European and American art through analysis of selected periods or themes. *(Lec. 3) Pre: permission of department. Spring 1982: Picasso.* Roworth

**484 Advanced Topics in Architectural History** *(I or II, 3)* Consideration of the history of architecture and city planning through analysis of selected themes or periods. Topics to be announced. *(Lec. 3) Pre: permission of department. May be repeated once with permission of instructor.* Staff

**501, 502 Graduate Studio Seminar I and II** *(I and II, 3 each)*

## Astronomy (AST)

*Chairperson:* Professor S. Pickart (Physics)

**108 Introductory Astronomy** *(I and II, 3)* Celestial sphere, earth as an astronomical body, sun, motions and characteristics of members of solar system, constellations, constitution of stars and nebulae. Planetarium used freely for lectures and demonstration. *(Lec. 3)* Penhallow (N)

**334 Optics**
See Physics 334.

**406 Atmospheric Physics I**
See Physics 406.

**407 Atmospheric Physics II**
See Physics 407.

**408 Introduction to Astrophysics** *(II, 3)* Application of photometry and spectroscopy to stellar composition, structure, and evolution. Radio astronomy and the structure of our galaxy. Energy production in stars and galaxies. Observational cosmology *(Lec. 3) Pre: PHY 112 or 214. 108 is recommended but not required.* Penhallow

**484 Laboratory and Research Problems in Physics**
See Physics 484.

**491, 492 Special Problems**
See Physics 491, 492.

## Bachelor of General Studies (BGS)

*Coordinators:* Daniel A. Goldenberg and Janet McHale (College of Continuing Education)

**100 Pro-seminar** *(I or II, 4)* Introduction to critical approaches to learning with emphasis on reading and rhetorical skills appropriate to college students. *Required of BGS students. S/U credit.* Staff (Cw)

**390 Social Science Seminar** *(I or II, 6)* Exploration of the social sciences for BGS students who have completed the Pro-seminar, started their area of concentration, and have the consent of their adviser. *Required of all BGS students. S/U credit.* Staff (S)

**391 Natural Science Seminar** *(I or II, 6)* Exploration of the natural sciences for BGS students who have completed the Pro-seminar, started their area of concentration, and have the consent of their adviser. *Required of all BGS students. S/U credit.* Staff (N)

**392 Humanities Seminar** *(I or II, 6)* Exploration of the humanities for BGS students who have completed their Pro-seminar, started their area of concentration, and have the consent of their adviser. *Required of all BGS students. S/U credit.* Staff (L)

**399 Supervised Senior Project** *(I and II, 3)* A project chosen by the student with faculty guidance on a topic relevant to the student's concentration, resulting in a paper or other demonstration of academic achievement. *Required of BGS students. Pre: senior standing in BGS program and approval of faculty supervisor.* Staff

## Biochemistry and Biophysics (BCP)

*Chairperson:* Professor Fisher

**302 The Molecular Basis of Life** *(II, 3)* Molecular basis of life as a key to origin of life, evolution, expression of genetic information, biological control. For the non-biology major interested in an overall view of biology at the molecular level. *(Lec. 3) Pre: junior standing.* Fisher, Hartman, and Tremblay

**311 Introductory Biochemistry** *(I and II, 3)* Chemistry of biological transformations in the cell. Chemistry of carbohydrates, fats, proteins, nucleic acids, enzymes, vitamins, and hormones integrated into a general discussion of the energy-yielding biosynthetic reaction in the cell. *(Lec. 3) Pre: CHM 124 or equivalent.* Staff

**401 (or MIC 401) Quantitative Cell Culture** *(I, 3)* Methods of mammalian cell culture to examine the normal and abnormal cell in

the study of cancer, genetic diseases, the radiation syndrome, nutrition, and other problems. *(Lec. 3) Pre: any two of the following: BIO 101, 102, BOT 111, ZOO 111 or MIC 210; senior standing or above.* Fisher

**403 (or MIC 403) Introduction to Electron Microscopy** *(I, 2)* Survey of techniques in electron microscopy. Discussion of advantages and limitations. Thin sectioning, negative staining, shadow-casting, freezing-etching, histochemical procedures, autoradiography, darkroom procedures, scanning electron microscopy, interpretation of electron micrographs. *(Lec. 2) Pre: permission of department.* Fisher and Hufnagel

**405 Electron Microscopy Laboratory**
See Microbiology 405.

**411 Biochemistry Laboratory** *(II, 3)* Biochemical approach to biological research including a biological problem in metabolism at the level of enzymology. Effect of an alteration of the hormonal or nutritional status of an organism on enzyme-systems evaluated. Instruments and biochemical methods. *(Lec. 1, Lab. 4) Pre: 311 or equivalent and permission of department.* Tremblay

**435 (or CHM 435) Physical Chemistry for Life Sciences** *(I, 3)* Gases, solution, thermodynamics, equilibrium, kinetics, quantum theory and photochemistry. *(Lec. 3) Pre: one semester each of organic chemistry, physics, and calculus (two semesters of each recommended). Not open to students majoring in chemistry.* Hartman

**491, 492 Research in Biochemistry and Biophysics** *(I and II, 1-6 each)* Special problems. Student outlines the problem, carries on experimental work, presents the conclusions in a report. *(Lab. 2 to 12) Pre: permission of instructor. Not for graduate credit.* Staff

**521 Introductory Biophysics** *(II, 3)*
**523, 524 Special Topics in Biochemistry and Biophysics** *(I and II, 1-6 each)*
**541, 542 Laboratory Techniques in Biochemistry** *(I and II, 3 each)*
**581, 582 General Biochemistry** *(I and II, 3 each)*
**595, 596 Seminar in Biochemistry and Biophysics** *(I and II, 1 each)*

## Biology (BIO)

*Chairpersons:* Professor Goos (Botany) and Professor Wilde (Zoology)

**101 Biology of Plants** *(I and II, 3)* Introduction to major concepts of biology through a study of plants, including structure, function, reproduction, inheritance, ecology, and topics of current interest. Designed for non-science majors. *(Lec. 2, Lab/Rec. 1) Not open to students who have passed BOT 111.* Swanson and Koske (N)

**102A General Animal Biology** *(I and II, 3)* Introduction to life processes of animals, including man. Examines biological aspects of inheritance, ecology, behavior, animal survey, and regulation of biosystems. Laboratory surveys general concepts of animal biology. *(Lec. 2, Lab. 2)* Farish and Goldsmith (N)

**102B General Animal Biology (Special Sections)** *(I and II, 3)* Same lectures as 102A, but laboratories examine specific topics. Topics vary each semester. Previous topics included marine biology, biological creative writing, biology as art. *(Lec. 2, Lab. 2)* Zoology Staff

*Note: Students who elect 101 may not enroll in BOT 111, and those who elect 102 may not enroll in ZOO 111.*

## Black Studies (BST)

*Director:* M. Hendrix

**101 Introduction to Black Studies: Concepts** *(I and II, 3)* Introduces students to some of the pivotal themes and areas of exploration in Black Studies and to the conceptual and methodological issues raised in the social sciences and the humanities by the study and analysis of the African-American experience. Hendrix and Staff (S)

**102 Introduction to Black Studies: Issues** *(I and II, 3)* Focus on contemporary expressions of the African-American experience. Emphasis on issues, research, and meaning to the social, political, and economic development of peoples of African descent. Hendrix and Staff (S)

**390 Directed Study or Research** *(I and II, 3)* Directed study arranged to meet the needs of individual students who desire independent work and to promote collective research efforts in Black Studies. *Pre: permission of director.* Hendrix and Staff

## Botany (BOT)

*Chairperson:* Professor Goos

**111 General Botany** *(I and II, 4)* Structure, physiology, and reproduction of seed plants as a basis for understanding broad principles of biology and relation of plants to human life. Survey of plant kingdom. *(Lec. 3, Lab. 2) Not open to students who have passed BIO 101.* Palmatier and Staff (N)

**202 Taxonomy of Vascular Plants** *(II, 3)* Classes, orders, and families of vascular plants. Principles, methods, and sources of data used in classification. *(Lec. 2, Lab. 3) Pre: 111 or permission of instructor. In alternate years, next offered in 1981-82.* Hauke

**216 Seaweeds and Society** *(II, 2)* Importance of algae in the environment; their impact upon human activity and technologies. *(Lec. 2) Pre: 111 or BIO 101.* Harlin

**221 General Morphology** *(II, 3)* Representative forms of algae, fungi, bryophytes, and vascular plants with emphasis on heredity, evolution, ecology, life cycle, and plant geography. *(Lec. 1, Lab. 4) Pre: 111 or permission of instructor.* Hauke

**245 Plant Physiology** *(I, 3)* Processes underlying the physiology of the whole plant. Emphasis on fundamental principles and interrelationships of plant processes in growth and development. *Pre: 111, CHM 112, or permission of instructor.* Albert

**262 Introductory Ecology**
See Zoology 262.

**311 Plant Anatomy** *(I, 3)* Structure of vascular plant tissues and organs as it relates to their function. Variations in anatomy, phylogeny of vascular tissue, anatomy of fossils, and the relation of structure to economic value. *(Lec. 1, Lab. 4) Pre: 111 or permission of instructor.* Hauke

**323 Field Botany** *(I, 3)* Collection, identification, and study of vascular plants with emphasis on native flora of Rhode Island. Use of manuals, interpretation of morphological characters, problems in nomenclature, and herbarium technique. *(Lec. 1, Lab. 5) Pre: 111 or BIO 101.* Killingbeck

**332 (or PLP 332) Plant Pathology: Introduction to Plant Diseases** *(II, 3)* Nature, cause, and control of plant diseases. Examples are taken mostly from serious diseases found in this region. *(Lec. 1, Lab. 4) Pre: 111 or permission of instructor.* Beckman

**352 Genetics** *(II, 3)* Fundamental concepts of inheritance and variation in plants, animals, bacteria, and viruses. Methods of recombination, the process of mutation, gene structure, and function. *(Lec. 3) Pre: 111 and ZOO 111 or permission of instructor. Not open to students who have taken ASP 352.* Mottinger

**355 Phycology: An Introduction to the Algae** *(II, 3)* Taxonomy, morphology, and evolution of algae. Use of ultrastructure in modern taxonomy; various systems of classification. Field trips to different communities. Labs on the taxa discussed and techniques for axenic culture. *(Lec. 2, Lab. 3) Pre: 221 or permission of instructor.* Sheath

**395 Undergraduate Seminar in Botany** *(II, 1)* Introduction to sources of botanical literature. Presentation of papers by students, guest speakers, and discussion by the class. *(Lec. 1)* Harlin

**418 Marine Botany** *(I, 3)* Field and laboratory study of ecology and taxonomy of various communities of marine plants, primarily on seaweeds and seagrasses. Methods of collecting, fixation, herbarium processing, and identification. Individual projects

required. *(Lec. 2, Lab. 3) Pre: 355 or permission of instructor. 262 suggested. In alternate years, next offered in 1981-82.* Sheath

**419 Freshwater Botany** *(I, 3)* Field and laboratory study of ecology and taxonomy of various communities of freshwater microalgae, macroalgae, and higher plants. Methods of collecting, fixation, enumeration, identification, and crop estimation. Individual collections required. *(Lec. 2, Lab. 3) Pre: 355 or permission of instructor. 262 suggested. In alternate years, next offered in 1982-83.* Sheath

**424 Plant Ecology** *(II, 3)* Distinguishing, describing, and determining the composition of plant communities, with a bearing on the landscape and role of humankind as an agent for change. Literature, special projects and reports, ecological techniques, field trips. One all-day field trip. *(Lec. 1, Lab. 4) Pre: 202, 262 or 323.* Palmatier

**426 Plant Geography** *(II, 3)* Environmental and non-environmental factors controlling distribution of species and vegetative types; origin, development and senescence of floras; distribution of modern vegetation types and theories of modern-day species distribution. *(Lec. 3) Pre: 202, 424, or permission of department. In alternate years, next offered 1982-83.* Staff

**432 Mycology: Introduction to Fungi** *(I, 4)* Structure, development, cytology, distribution, and identification of fungi, with consideration of their importance in industry, medicine, plant disease, and organic decomposition. *(Lec. 2, Lab. 4) Pre: 221 or permission of instructor; 332 suggested.* Goos

**433 Field Mycology** *(SS, 3)* Basic course involving methods of collecting, preserving, and identifying fungi and the use of literature. Emphasis on higher fungi. *(Lec. 1, Lab. 4) Pre: 111 or BIO 101 or equivalent.* Goos

**445 Advanced Plant Physiology** *(II, 3)* Emphasis on quantitative and metabolic aspects of plant processes and their relationships to growth. *(Lec. 2, Lab. 3) Pre: 245, CHM 124 or 227, or equivalent or permission of instructor.* Albert

**453 (or MIC 453) Cell Biology** *(II, 3)* Structure, replication and function of eukaryotic cells at subcellular level. Topics considered include cell membranes, cytoplasmic organelles and nuclei, cell division, cellular differentiation, and methods. Emphasis on recent publications. *(Lec. 2, Lab. 3) Pre: 2 semesters of biology, BCP 311, junior standing, or permission of instructor.* Swanson

**454 Advanced Genetics Lab** *(I, 3)* Principles of classical and molecular genetics using microorganisms as well as higher plants and animals. Experimental techniques include human chromosome preparations, screening for growth requirements in microorganisms, mutagenesis, gel electrophoresis and nucleic acid hybridization. *(Lab. 6) In alternate years; next offered 1981-82. Pre: 352.* Mottinger

**455 Marine Ecology**
See Zoology 455.

**457 Marine Ecology Laboratory**
See Zoology 457.

**491, 492 Special Problems** *(I and II, 1-3 each)* Selected areas pertinent to needs of individuals or small groups. Class, seminar or tutorial situations. *(Lec. 1-3 or Lab. 2-6) Offered only to undergraduates on arrangement with staff.* Staff

**511 Developmental Plant Anatomy** *(I, 3)*
**512 Morphology of Vascular Plants** *(I, 3)*
**521 (or MIC 521) Recent Advances in Cell Biology** *(I, 2)*
**524 Methods in Plant Ecology** *(II, 3)*
**534 Physiology of the Fungi** *(I, 3)*
**538 Ecology of Fungi** *(I, 3)*
**540 Experimental Mycology** *(II, 3)*
**542 Medical Mycology** *(II, 3)*
**551 Seminar in Aquatic Botany** *(I, 1)*
**554 Cytogenetics** *(I, 4)*
**559 Physiological Ecology of Marine Macroalgae** *(I, 4)*
**562 Seminar in Plant Ecology** *(II, 2)*
**579 Advanced Genetics Seminar** *(I and II, 1)*
**581, 582 Botany Seminar** *(1 and II, 1 each)*
**591, 592 Botanical Problems** *( and II, 1-3 each)*
**593, 594 Botanical Problems** *(1 and II, 1-3 each)*

## Business Education (BED)

*Acting Chairperson:* Associate Professor Sink

**110 Introduction to Business** *(I and II, 3)* Nature, philosophy, objectives, and scope of American business system. Emphasis in the interrelations of the functional areas. *(Lec. 3)* Staff (S)

**121 Elementary Typewriting** *(I, 2)* Development of basic skill in the operation of the typewriter. Understanding office procedures using the typewriter. Students expected to attain speed of 40 words a minute. *(Lab. 4)* Staff

**122 Advanced Typewriting** *(II, 2)* Continuation of 121 with emphasis on business applications for typewriting. Speed of 55 words a minute required by end of semester. *(Lab. 4) Pre: 121 or equivalent.* Staff

**227 Business Communications** *(II, 3)* Effective business communication with interdisciplinary approach. Practice and discussion of basic types of business messages, written and oral. Integrated case problems to develop and present effective reports. *(Lec. 3)* Staff (Cw)

**321 Elementary Shorthand** *(I, 4)* Fundamental principles of Gregg shorthand. *(Rec. 4)* Staff

**322 Advanced Shorthand, Dictation and Transcription** *(II, 4)* Speed and accuracy in taking dictation. Synchronization of elements of transcription: shorthand, typewriting, and English. *(Rec. 3, Lab. 5) Pre: 321 or permission of department.* Staff

**324 Advanced Dictation and Transcription** *(II, 2)* Refinement of techniques in dictation and transcription to meet business standards. *(Rec. 1, Lab. 3) Pre: for other than business education and office administration majors, permission of department.* Staff

**326 Word Processing and Equipment Management** *(II, 3)* Development and use of word processing systems, office equipment, reprographics, and records in industry. *Pre: junior standing or permission of department.* Staff

**328 Office Procedures and Administration** *(II, 3)* Seminar in the administrative procedures of the business office *(Lec. 3)* Staff

**421 Directed Study** *(I and II, 1-3)* Independent study. Development of an approved project supervised by a member of department faculty. *Pre: junior standing, permission of department and instructor. Not for graduate degree program credit.* Staff

**422 Special Problems** *(I and II, 3)* Lectures, seminars, and instruction with special emphasis on student research projects. *Pre: junior standing, permission of department and instructor. Not for graduate degree program credit.* Staff

**426 Training and Development Theory and Practice** *(I, 3)* Development of education programs in industry. Teaching and learning strategies. Needs assessment. Evaluation. *Pre: PSY 113 and senior standing. Not for graduate credit.* Staff

**427 Organization, Administration, and Methods of Teaching Distributive Education** *(I, 3)* Background, objectives, coordination, and teaching techniques; administrative policies and operation of programs in secondary and post-secondary schools, and adult education programs. Planning of curriculums. *(Individualized study) Pre: permission of department. Not for graduate degree program credit.* Staff

**428 Coordinating and Developing Curriculum for Cooperative Vocational Business and Distributive Education** *(I, 3)* Duties of the coordinator: selecting training agencies, developing job analysis, selecting and briefing the training supervisor, selecting and working with advisory committee, utilizing other community resources. Principles and problems in the construction of high school and post-secondary school curriculums *(Lec. 3) Pre: senior standing and permission of department.* Staff

**520 Research and Methods in Teaching Office Occupations Subjects** *(I, 3)*
**522 Improvement of Instruction in Social Business Subjects** *(II, 3)*
**524 Foundations and Recent Developments in Business Education** *(II, 3)*
**525 Research Seminar in Business Education** *(I, 3)*
**526 Field Study and Seminar in Business Education** *(I and II, 3)*
**527 Communication for Business** *(I, 3)*
**528 Workshop in Business Education** *(SS, 1-6)*

## Business Law (BSL)

*Chairperson:* Professor Overton (Management)

**333 Law in a Business Environment** *( I, 3)* Contractual relations prefaced by a survey of origins, framework, and concepts of our legal system. *(Lec. 3) Pre: junior standing. Open to non-business students only by permission of department.* Staff

**334 Law in a Business Environment** *(II, 3)* Operation of the system of jurisprudence as it affects agency business organizations and the sale of merchandise. *(Lec. 3) Pre: 333. Open to non-business students only by permission of department.* Staff

**442 Property Interests** *(II, 3)* Creation and transfer of personal and real property interests: suretyship and guarantee, bailments, real estate law, trusts and estates. *(Lec. 3) Pre: 333 or permission of instructor.* Staff

**450 Consumer Law and Legislation** *(I, 3)* Introduction to consumer law (state and federal). Coverage includes a study of statutory law, administrative agencies, and court decisions. *(Lec. 3) Pre: 333 or permission of instructor.* Sisco and Laviano

**500 Legal Environment of Business**

**501 Law and Accounting** *(I, 3)*

## Chemical Engineering (CHE)

*Chairperson:* Professor Estrin

**212 Chemical Process Calculations** *(I, 3)* Orientation to chemical engineering, material-balance computations on chemical processes, use of gas laws, vapor pressure, humidity, solubility, and crystallization. *(Lec. 2, Lab. 3) Pre: CHM 112 or 192.* Shilling

**272 Introduction to Chemical Engineering** *(II, 3)* Introduction to the use of computers and numerical methods including numerical solution of differential equations, as applied to chemical engineering. *(Lec. 2, Lab. 3) Pre: 212 and MTH 243.* Votta

**313 Chemical Engineering Thermodynamics** *(II, 3)* Applications of the first, second and third laws of thermodynamics involving thermophysics, thermochemistry, energy balances, combustion, and properties of fluids. *(Lec. 2, Lab. 3) Pre: 212 or CHM 431 and MTH 243.* Votta

**314 Chemical Engineering Thermodynamics** *(I, 3)* Continuation of 313 with applications to compression, refrigeration, and chemical equilibrium. *(Lec. 2, Lab. 3) Pre: 313.* Votta

**322 Chemical Process Analysis** *(I, 1)* Quantitative experimental studies of selected unit chemical processes. *(Lab. 3) Pre: credit or registration in 347.* Votta

**328 Industrial Plants** *(I, 1)* Field trips to nearby plants demonstrating various phases of chemical engineering. Written reports are required. *(Lab. 3) Pre: 348.* Rose

**331 Applied Metallurgy** *(I, 3)* Fundamentals of metallurgy with emphasis on physical and chemical properties and their relationship to metal structure, including alloy systems of engineering significance; microstructural control of properties. *(Lec. 2, Lab. 3) Not open for credit for engineering students, except in Mechanical Engineering Technology.* Staff

**332 Physical Metallurgy** *(I and II, 3)* Fundamentals of physical metallurgy as they apply particularly to the engineering metals and their alloys. Properties, characteristics and structure of metals, theory of alloys, thermal processing, and studies in corrosion. *(Lec. 2, Lab. 3) Pre: CHM 101, 103 or 191 and junior standing.* Rockett

**333 Engineering Materials** *(I and II, 3)* First course in engineering materials devoted largely, but not exclusively, to physical metallurgy. Includes structure and properties of pure substances and binary systems at equilibrium and, when used intentionally, at non-equilibrium. *(Lec. 2, Lab. 3) Pre: junior standing or permission of instructor.* Rockett

**345, 346 Chemical Engineering Laboratory** *(I and II, 2 each)* Quantitative studies illustrating chemical engineering principles. Emphasis on report writing and the interpretation of experimental data. *(Lab. 6) Pre: 348.* Shilling

**347 Transfer Operations I** *(I, 3)* Dimensional analysis; fluid statics; mass, energy, and momentum balances for fluid systems, boundary layers, turbulence, incompressible flow; flow through fixed beds of solids and fluidized beds; filtration. *(Lec. 3) Pre: credit or registration in 313 or MCE 341.* Staff

**348 Transfer Operations II** *(II, 3)* Heat transfer: conduction, convection, radiation. Mass transfer: distillation, liquid extraction, gas absorption; staged and differential contact. *(Lec. 2, Lab. 3) Pre: 347.* Knickle

**349 Transfer Operations III** *(I, 2)* Diffusion and mass transfer, humidification and dehumidification, water cooling, absorption and ion exchange, drying, leaching. *(Lec. 2) Pre: 348.* Staff

**351, 352 (or OCE 351, 352) Plant Design and Economics** *(I and II, 3 each)* Elements of plant design integrating the principles learned in previous courses. Emphasis is on optimum economic design and the writing of reports. *(Lec. 1, Lab. 6) Pre: 314 and 348.* Knickle

**391, 392 Honors Work** *(I and II, 1-3 each)* Independent study under close faculty supervision. Discussion of advanced topics in chemical engineering in preparation for graduate work. *Pre: junior standing or permission of department.* Staff

**403, 404 (or OCE 403, 404) Introduction to Ocean Engineering Processes I and II** *(I and II, 3 each)* Theory and basic principles directly applicable to ocean-related processes. Desalinization, mining, combating oil spills, seawater as a coolant, seawater as a waste diluent, food processing, sulfur and petroleum production, recovery minerals. *(Lec. 2, Lab. 4) Pre: permission of instructor.* Barnett and Knickle

**425 Process Dynamics and Control** *(II, 3)* Principles involved in automatic control of processing plants. Modeling and responses of dynamic systems, feedback control. *(Lec. 3) Pre: MTH 243 and ELE 211, or 220 and credit or registration in CHE 347 or MCE 354.* Shilling

**437 Materials Engineering** *(I and II, 3)* Introduction to engineering aspects of the fundamentals of the solid state. Structural, chemical, and physical properties of engineering materials with emphasis on ceramics, polymers, and composite materials. *(Lec. 3) Pre: CHM 101, 103 or 191 or permission of department.* Gielisse

**447 (or FSN 447) Food Engineering I** *(I, 4)* Basic principles underlying unit operations of chemical engineering applied to food industries. Topics covered include heat transfer, fluid flow, extraction and drying. Not for credit in chemical engineering curriculum. *(Lec. 3, Lab. 3) Pre: CHM 228, PHY 112, MTH 109 and permission of instructor.* Barnett

**464 Industrial Reaction Kinetics** *(I, 3)* Modeling of simple chemical-reacting systems; computation of design parameters to satisfy system constraints and typical restraints (e.g., product rate and distribution) and conditions of optimality. *(Lec. 3) Pre: 314 and 432.* Shilling

**471 Analysis of Engineering Data** *(I, 3)* Application of some of the modern mathematical techniques to the analysis of engineering data. *(Lec. 3) In alternate years, next offered 1981-82.* Votta

**491, 492 Special Problems** *(I and II, 1-6 each)* Advanced work under the supervision of a member of the staff and arranged to suit the individual requirements of the student. *(Lec. or Lab. according to nature of problem. Credits not to exceed a total of 12.) Pre: permission of department. Not for graduate credit.* Staff

**501, 502 Graduate Seminar** *(I and II, 1 each)*
**530 Polymer Chemistry** *(I, 3)*
**531 Polymer Engineering** *(II, 3)*
**532 Ceramic Engineering** *(I, 3)*
**533 Engineering Metallurgy** *(II, 3)*
**534 (or OCE 534) Corrosion and Corrosion Control** *(I, 3)*
**535 (or OCE 535) Advanced Course in Corrosion** *(II, 3)*
**537 Advanced Materials Engineering** *(II, 3)*
**539 Electron and Light Microscopy of Solids** *(I, 3)*
**540 Phase Equilibria** *(II, 3)*
**548 (or FSN 590) Food Engineering II** *(II, 3)*
**549 (or FSN 549) Food and Biochemical Engineering III** *(II, 3)*
**572 X-ray Diffraction and Fluorescence** *(I, 3)*
**573 Mechanical Metallurgy** *(I or II, 3)*
**574 Biochemical Engineering** *(I, 3)*
**575 (or FSN 575) Biochemical Engineering II** *(II, 3)*
**581 Introduction to Nuclear Engineering** *(I and II, 3)*
**582 Radiological Health Physics** *(I, 3)*
**583 Measurements in Nuclear Engineering** *(I, 3)*
**586 Nuclear Reactor Laboratory** *(II, 3)*
**591, 592 Special Problems** *(I and II, 1-6 each)*

## Chemistry (CHM)

*Chairperson:* Professor Cruickshank

**101 General Chemistry Lecture I** *(I and II, 3)* Fundamental concepts and principles in atomic structure, energy relationships, and reaction mechanisms balanced with applied and descriptive materials. *(Lec. 3) Not open to students who have received credit for 103 or 191.* Rosen, Gonzalez (N)

**102 Laboratory for Chemistry 101** *(I and II, 1)* Experimental work illustrating certain concepts and principles of general chemistry. Experiments in solution, reaction rates, enthalphy, molar heat capacity, and electrochemistry. *(Lab. 3) Pre: prior or concurrent registration in 101.* Staff (N)

**103 Introductory Chemistry Lecture** *(I, 3)* One-semester general chemistry course designed for students whose curriculums require the one-semester organic chemistry course, 124. *(Lec. 3) Not open to students who have received credit for 101 or 191.* P. Brown and Petersen (N)

**105 Laboratory for Chemistry 103** *(I, 1)* Fits course content of 103. *(Lab. 3) Pre: prior or concurrent registration in 103.* Staff (N)

**107 Chemistry of Our Environment** *(I and II, 3)* Elementary chemistry for non-science majors, emphasizing chemical aspects of the human environment. Chemistry of the biosphere, of pollution, and aspects of industrial chemistry. *(Lec. 3)* Staff (N)

**112 General Chemistry Lecture II** *(I or II, 3)* Elementary thermodynamics, chemical equilibration in aqueous solutions, properties and reactions of inorganic species, practical applications of chemical principles. *(Lec. 3) Pre: 101 or 103. Not open to students who have passed 104.* Staff (N)

**114 Laboratory for Chemistry 112** *(I or II, 1)* Semi-micro-qualitative analysis and its applications. *(Lab. 3) Pre: prior or concurrent enrollment in 112. Not open to students who have passed 106.* Staff (N)

**124 Organic Chemistry** *(I and II, 4)* Elementary principles of organic chemistry with emphasis on aliphatic compounds, especially those of physiological significance such as amino acids and proteins, carbohydrates, fats and waxes. *(Lec. 3, Lab. 3) Pre: 101, 102 or 103, 105. Not open to students in chemistry or chemical engineering.* MacKenzie (N)

**191 General Chemistry** *(I, 5)* Descriptive inorganic chemistry, qualitative analysis, and an introduction to quantitative analysis. Required for students in the chemistry curriculum who have had a year of high school chemistry. *(Lec. 4, Lab. 3) Not open to students who have received credit for 101 or 103.* Freeman (N)

**192 General Chemistry** *(II, 5)* Continuation of 191. *(Lec. 4, Lab. 3)* Fasching (N)

**212 Quantitative Analysis** *(I, 4)* Principles of gravimetric and volumetric analysis with detailed attention to solution of stoichiometric problems. Laboratory analysis of representative substances by gravimetric or volumetric procedures. *(Lec. 3, Lab. 3) Pre: 112 and 114.* Forcé

**226 Organic Chemistry Laboratory** *(I and II, 2)* Common techniques and typical preparative methods in both aliphatic and aromatic series. *(Lab. 6) Pre: prior registration in 228. Not open to students who have received credit for 229 or 230.* Cheer

**227 Organic Chemistry Lecture I** *(I or II, 3)* General principles and theories with emphasis on classification, nomenclature, methods of preparation and characteristic reactions of organic compounds in aliphatic series. *(Lec. 3) Pre: 104 and 106 or 112 and 114 or 192.* Cheer, Rosen

**228 Organic Chemistry Lecture II** *(I or II, 3)* Continuation of 227 with emphasis on the aromatic series. *(Lec. 3) Pre: 227.* Cheer, Vittimberga

**229 Organic Chemistry Laboratory I** *(SS, 1)* Common techniques and typical preparative methods in aliphatic series. *Pre: prior or concurrent registration in 227.* Staff

**230 Organic Chemistry Laboratory II** *(SS, 1)* Continuation of 229 with emphasis on the aromatic series. *Pre: 229 or equivalent and prior or concurrent registration in 228.* Staff

**291 Organic Chemistry** *(I, 4)* Development of principles and theory through an examination of structure, nomenclature, and reactions of organic compounds. *(Lec. 3, Lab. 3) Pre: 192 or permission of instructor. Not open to students who have passed 227.* Goodman

**292 Organic Chemistry** *(II, 4)* Continuation of 291 with extension to several additional families of compounds. *(Lec. 3, Lab. 3) Pre: 291. Not open to students who have passed 228.* Goodman

**335, 336 Physical Chemistry Laboratory** *(I and II, 2 each)* Physical chemical properties of gases, liquids and solutions; electrochemical cells; phase diagrams of binary and ternary systems; and chemical kinetics. Designed for chemistry majors *(Lab. 4) Pre: 431 for 335; 432 for 336. May be taken concurrently with 431, 432.* Staff

**353, 354 Undergraduate Research** *(I and II, 1-6 each)* Methods of approach to a research problem. Literature, laboratory work and a report of an original problem or problems. *(Lab. 3-18) May be repeated for a total of six credits each. Pre: permission of instructor.* Yang

**392 Seminar in Chemistry** *(II, 1)* Preparation and presentation of papers on selected topics in chemistry. Required of seniors in chemistry. *(Lec. 1) Undergraduate credit only. Pre: prior or concurrent registration in 228 or 432.* Staff

**401 Intermediate Inorganic Chemistry** *(I, 3)* Principles of inorganic chemistry broadly related to structure and reactivity. Many-electron atoms bonding theories, acid-base concepts, coordination chemistry, reaction mechanisms. *(Lec. 3) Pre: 432.* Nelson

**412 Instrumental Methods of Analysis** *(II, 3)* Theory and application of optical and electrical instruments to solution of chemical problems: flame photometry, emission spectroscopy, ultraviolet, visible, and infrared spectrophotometry, colorimetry, turbidimetry, nephelometry, fluorometry, potentiometry, voltammetric titration methods. *(Lec. 3) Pre: 228 and prior or concurrent registration in 432.* Staff

**414 Instrumental Methods of Analysis Laboratory** *(II, 2)* Applications of instrumental methods to the solution of problems in analytical chemistry. *(Lab. 6) Pre: prior or concurrent enrollment in 412.* Forcé

**425 Qualitative Organic Analysis** *(I, 2)* Methods of identification of pure organic compounds. Separation of mixtures and identification of components by infrared and nuclear magnetic resonance spectroscopy. *(Lab. 6) Pre: 292 or equivalent and prior or concurrent registration in 427.* Staff

**427 Intermediate Organic Chemistry** *(I, 3)* Intermediate organic chemistry with emphasis on organic reaction mechanism, stereochemistry, spectroscopic characterization, and newer synthetic methods. *(Lec. 3) Pre: 226, 228 or 292.* Staff

**431, 432 Physical Chemistry** *(I and II, 3 each) 431:* Gas laws, kinetic theory, laws of thermodynamics, chemical equilibrium, phase equilibria, and electrochemistry. *432:* Atomic theory, quantum chemistry, bonding, molecular interactions, and chemical kinetics. *(Lec. 3) Pre: 112 or 192 and MTH 142, PHY 111 and 112 or PHY 213, 214, 285 and 286. May be taken for graduate credit only by students whose disciplines do not require physical chemistry as part of their undergraduate programs.* Gonzalez, C. Brown

**435 Physical Chemistry for Life Sciences** See Biochemistry and Biophysics 435.

**501 Advanced Inorganic Chemistry I** *(I, 3)*
**502 Advanced Inorganic Chemistry II** *(II, 3)*
**511 Advanced Analytical Chemistry I** *(I, 3)*
**512 Advanced Analytical Chemistry II** *(II, 3)*
**518 Radiochemistry** *(II, 3)*
**521 Advanced Organic Chemistry I** *(I, 3)*
**522 Advanced Organic Chemistry II** *(II, 3)*
**531 Advanced Physical Chemistry I** *(I, 3)*
**532 Advanced Physical Chemistry II** *(II, 3)*
**535 Chemical Applications of Group Theory** *(I, 3)*
**536 Molecular Spectroscopy and Structure** *(II, 3)*
**544 Data Processing in Chemistry** *(II, 3)*

## Civil and Environmental Engineering (CVE)

*Chairperson:* Professor W. E. Kelly

**216 Metronics** *(I, 3)* Applications of numerical analysis and computer programming to travers, coordinate geometry, curves, and earth work computations. *(Lec. 2, Lab. 3) Pre: MTH 141.* Staff

**220 Mechanics of Materials** *(I and II, 3)* Theory of stresses and strains, thin-walled cylinders, beam deflections, columns, combined bending, and direct stresses, joints, indeterminate beams. *(Lec. 3) Pre: MCE 162.* Staff

**303 to 306 Introduction to Professional Practice in Civil Engineering** *(I and II, 0)* Discussion with faculty and visiting speakers on curriculum and career planning, professional practice and ethics, employment opportunities, and graduate study. *(Lab. 2) Required of all civil engineering students in their sophomore, junior and senior years. S/U credit.* Staff

**315 Surveying I** *(I, 3)* Theory and practice of plane surveying including use, care, and adjustment of surveying instruments, boundary surveys, horizontal and vertical curves, earthwork and topography. *(Lec. 2, Lab. 3) Pre: MTH 141.* Urish

**322, 323 Civil Engineering Laboratory I and II** *(I and II, 2 each)* Properties and behavior of engineering materials. Directed work in concrete, soils, and bituminous materials and experimental stress analysis. Independent student projects. *(Lec. 1, Lab. 3) Pre: 220.* Staff

**334 Construction Planning and Specifications** *(II, 3)* Introduction to construction planning; procedures involved in construction activities with major emphasis on heavy construction. *(Lec. 3) Pre: 220.* Urish

**346 Transportation Engineering** *(II, 3)* Development, location and design aspects of the major transportation systems. *(Lec. 3)* Moultrop

**352 Structural Analysis and Design I** *(I, 3)* Structural systems: beams, frames, trusses. Conjugate beam, virtual work, general method for indeterminate structures. Introduction to design of steel structures. *(Lec. 3) Pre: 220.* Staff

**353 Structural Analysis and Design II** *(II, 3)* Energy methods, slope deflection, moment distribution, influence lines, stability, matrix methods. Introduction to reinforced concrete design. *(Lec. 3) Pre: 352.* Staff

**374 Environmental Engineering I** *(I, 3)* Systems concerned with urban environmental problems of water supply and treatment, sewerage treatment of municipal and industrial waste waters, stream pollution, air pollution, and disposal of solid waste materials. *(Lec. 3) Pre: MTH 243 or permission of department.* Staff

**381 Geotechnical Engineering** *(II, 4)* Engineering properties of soil seepage, drainage, and consolidation, theory of earth pressure, bearing capacity and slope stability. Laboratory studies of physical properties, compaction, seepage, consolidation, and shear strength. *(Lec. 3, Lab. 3) Pre: 220.* Staff

**391 Honors Work** *(I and II, 3)* Independent study under close faculty supervision. Discussion of advanced topics in civil engineering in preparation for graduate work. *Pre: junior standing or permission of department.* Staff

**396 Civil Engineering Analysis** *(II, 3)* Problems from several fields of civil and environmental engineering solved by numerical methods with particular emphasis on use of electronic digital computers. Computer assignments in the area of each student's interest. *(Lec. 2, Lab. 3) Pre: 216.* Lavelle or Marcus

**406 (or OCE 406) Introduction to Coastal and Ocean Engineering** *(II, 3)* Wave theory and forecasting, beach erosion, sediment transport, wave forces, effect of pollutants on water quality, materials for ocean construction. *(Lec. 3) Pre: junior standing in civil engineering. Not for graduate program credit.* Staff

**407 (or OCE 407) Project in Ocean Engineering** *(II, 3)* Independent study, design project, or research project on an approved topic related to the ocean environment. *Pre: 491 or permission of instructor. Not for graduate program credit.* Staff

**411 (or OCE 411) Basic Coastal Measurements** *(I, 3)* Basic coastal measuring exercises from boats, in-situ, and on laboratory samples. Included will be measurement of current and tide, sediment transport and erosion, sediment testing, water testing, and bottom profiling. *(Lec. 1, Lab. 3) Pre: advanced standing in civil engineering or permission of instructor. Not for graduate program credit.* Staff

**442 Traffic Engineering** *(I, 3)* Highway traffic characteristics and methods of providing for an effective, free and rapid flow of traffic. Types of studies, regulations, control devices and aids, planning and administration. *(Lec. 2, Lab. 3) Pre: 346.* Moultrop

**447 Highway Engineering** *(II, 3)* Principles of design of modern highways and streets including economic consideration; capacity, geometric layout, drainage, pavements, and construction. *(Lec. 2, Lab. 3) Pre: 346.* Moultrop

**453 Computer Analysis of Structures** *(I, 3)* Introduction to matrix methods of structural analysis. Solutions of planar structures using a digital computer. *(Lec. 3) Pre: 353 and 396.* Lavelle

**460 Analysis and Design of Metal Structures** *(II, 3)* Properties of metals. Current design criteria and practice for the design of steel elements. Elastic and inelastic behavior and design of tension, compression, flexural, and beam-column members. Design of connections. Comprehensive design problems. *(Lec. 2, Lab. 3) Pre: 352. Not for graduate degree program credit.* Staff

**465 Analysis and Design of Concrete Structures** *(I, 3)* Current criteria and practice for design of reinforced and prestressed concrete structures. Elastic and ultimate strength analysis of beams, slabs, columns and frames. Comprehensive design problems. *(Lec. 3, Lab. 3) Pre: 353. Not for graduate degree program credit.* Staff

**470 Water Supply and Treatment** *(II, 3)* Development of surface and ground water supplies, water transportation and distribution systems. Water treatment processes including chemical coagulation and precipitation, water softening, iron and manganese removal, disinfection, corrosion control, and saline water conversion. *(Lec. 2, Lab. 3) Pre: 374 or permission of instructor. Not for graduate degree program credit.* Staff

**471 Municipal Waste Water Systems** *(I, 3)* Development of systems for the collection and conveyance of municipal waste waters. Treatment of waste waters by physical, chemical, and biological systems. Re-use of waste waters. Regional systems development and financing. *(Lec. 2, Lab. 3) Pre: 374 or permission of instructor. Not for graduate degree program credit.* Staff

**472 Industrial Air Pollution** *(I or II, 3)* Sources and characteristics of urban-industrial air pollution, allowable concentrations and control, stack sampling, chemical supplements in air pollution control, diffusion of pollutants, site selection and abatement programs. Air resources management programs. *(Lec. 3) Pre: permission of department.* Staff

**478 Solid Waste Disposal and Management** *(II, 3)* Sources, collection and treatment methods for the removal of solid wastes from the environment. Recovery and re-use of waste materials. Economics of solid wastes and by-products. Interrelation between solid wastes, air and water pollution. *(Lec. 3) Pre: permission of department.* Sussman and Poon

**481 Soil Behavior** *(I, 3)* Behavior of granular and cohesive soils with experimental determinations of soil properties. Emphasis on shearing strength and seepage studies. *(Lec. 2, Lab. 3) Pre: 380 or permission of instructor.* Staff

**482 Soil Engineering** *(II, 3)* Strength, stability, and settlement considerations in design of foundation, retaining wall, and earth dam structures. Sub-surface investigations and economic factors in the selection of suitable foundations. *(Lec. 2, Lab. 3) Pre: 380.* Staff

**483 Foundation Engineering** *(II, 3)* Application of the principles of soil mechanics to the design of sheet piling, cofferdams, and wharves. Advanced problems in the selection and design of foundations for major structures including buildings, bridges, walls, dams, etc.; case studies. *(Lec. 2, Lab. 3) Pre: 380.* Staff

**491, 492 Special Problems** *(I and II, 1-6 each)* Advanced work, under supervision of a member of the staff and arranged to suit individual requirements of the student. *(Lec. or Lab. according to nature of problems. Credits not to exceed a total of 12) Pre: permission of department.* Staff

**495 Civil and Environmental Engineering Systems** *(I, 3)* Practical civil and environmental engineering projects, broad in scope, in the areas of water resources, structures, pollution control and transportation, are studied, analyzed, designed and discussed. *(Lec. 3) Pre: senior standing in civil engineering. Not for graduate degree program credit.* Marcus

**524 (or OCE 524) Marine Structural Design** *(II, 3)*

**551 Advanced Structural Analysis** *(I or II, 3)*

**565 Response of Structures to Dynamic Loads** *(I or II, 3)*

**570 Sanitary Chemistry** *(I, 3)*

**571 Sanitary Chemistry Laboratory** *(II, 3)*

**572 Biosystems in Sanitary Engineering** *(I or II, 3)*

**575 Open Channel Hydraulics** *(I or II, 3)*

**586 Physico-chemical Properties of Soils** *(I, 3)*

**587 Ground Water Flow and Seepage Pressure** *(I, 3)*

**588 Ground Water Hydrology** *(II, 3)*

**596 Numerical Methods in Structural Engineering** *(I or II, 3)*

## Classics (CLA)

*Section Head:* Associate Professor Cashdollar

**394 Greek Mythology and Religion: Gods and the Universe** *(I and II, 3)* Ancient Greek gods and cults. Cosmogony, succession, anthropogony, cosmic castastrophe. Hellenistic and late classical developments in theology and cult practice. Readings in English translation, color slides. *(Lec. 3)* Cashdollar (F)

**395 Greek Mythology: Gods, Heroes, and Humans** *(I and II, 3)* The hero in ancient Greek epic and drama. Epic cycles, historical legend, folktale. Hellenistic developments in hero cults. Occult practices. Readings in English translation, color slides. *(Lec. 3)* Cashdollar

**396 Mythology of the Romans** *(I and II, 3)* Ancient Roman gods and cults. Native, Greek and oriental myths and native historical legend in Roman epic, lyric, drama, prose, syncretism, occultism, astrology. Readings in English translation, color slides. *(Lec. 3)* Cashdollar (F)

## Communication Skills (CMS)

**101 College Communication Skills** *(I and II, 6)* An integrated, interdisciplinary approach to the acquisition of communication skills. Instruction given in composition and oral communication utilizing a theoretical model common to both. *Not open to students who are currently taking or who have taken SPE 101 or WRT 101.* Katula, Schwegler, Swan, Dillavou, Martin, Brownell (Cw) (C)

## Communications

**Business Education**
227 Business Communications

**Communication Skills**
101 College Communication Skills

**Journalism**
212 News Writing and Reporting
324 Magazine Article and Feature Writing

**Speech Communications**
101 Fundamentals of Oral Communication
102 Public Speaking
215 Argumentation and Debate
220 Group Discussion

**Writing**
002 Writing Lab
101 Composition I
102 Composition II
112 English as a Second Language I
122 English as a Second Language II
123 College Writing for Returning Students
300 Advanced Expository Writing
333 Scientific and Technical Writing

## Community Planning (CPL)

*Director:* Professor Galloway

**410 Fundamentals of Urban Planning** *(II, 3)* Survey of urban planning principles, methods, and techniques pertinent to contemporary urban problems. History of city forms and functions and development of urban planning as a profession. Problems and priorities in shaping the future urban environment. *(Lec. 3) Primarily for students not enrolled in the graduate curriculum in community planning and area development.* Kupa

**434 Introduction to Environmental Law** *(II, 3)* Surveys issues arising out of laws designed to protect the environment and manage resources: right to a decent environment, government regulation versus private property rights, citizen participation in planning environmental controls. *(Lec. 3) For students not enrolled in the graduate curriculum in community planning and area development.* Cushman

**501 Introduction to Community Planning, History and Theory** *(I, 3)*

**505 Planning Methods I** *(I, 3)*

**506 Planning Methods II** *(II, 3)*

**507 Planning Studio I** *(II, 6)*

**508 Research Methodology** *(II, 3)*

**515 Social Planning** *(II, 3)*

**520 Seminar in Regional Planning and Development** *(II, 3)*

**521 (or REN 532) Land Resources Economics** *(I, 3)*

**531 Seminar in Urban Design** *(I, 3)*

**532 Site Planning** *(II, 3)*

**534 Environmental Law** *(II, 3)*

**539 Historical Preservation Planning** *(II, 3)*

**540 Housing in American Society** *(II, 3)*
**541 Manpower Planning** *(I, 3)*
**544 Urban Planning and Politics in the Metropolis** *(II, 3)*
**552 Values and Prediction in Planning** *(I or II, 3)*
**570 Plan Implementation** *(I or II, 3)*
**591, 592 Special Problems in Planning** *(I or II, 3)*

## Comparative Literature Studies (CLS)

*Coordinator:* Associate Professor Kuhn

**250 Themes and Myths** *(I or II, 3)* Study of the evolution and transformation of a myth or theme in several national literatures. An introduction to a comparative and interdisciplinary approach. *May be repeated for credit as often as the topic changes. May be taken once for general education credit. Spring 1982: Perspectives Toward the American West. (Lec. 3)* Marshall (A)

**335 Interdisciplinary Studies in Comparative Literature** *(I or II, 3)* Study of the interrelationships of two or more national literatures (in translation) with another discipline. *May be repeated for credit as often as the topic changes. (Lec. 3) Pre: 2nd semester sophomore standing or permission of instructor.* Staff

**350 Literary Theory and Criticism** *(I or II, 3)* Introduction to theories of literature and their application in the analysis of selected texts. *May be repeated for credit as often as the topic changes. (Lec. 3)* Staff

**450 Studies in Comparative Literature** *(I or II, 3)* Detailed study of literary movement, genre, or an aspect of literature as seen in two or more literatures. *May be repeated for credit as often as the topic changes. (Lec. 3) Pre: 6 credits in literature or permission of instructor.* Staff

**510 Introduction to Comparative Literature** *(I or II, 3)*
**520 Literary Theory and Criticism** *(I and II, 3)*
**530 Approaches in Comparative Literature** *(I or II, 3)*

## Computer Science (CSC)

*Chairperson:* Professor Hemmerle (Computer Science and Experimental Statistics)

**201, 202 Introduction to Computing I, II** *(I and II, 3 each)* Algorithms, programs, and computers. Programming and program structure, data representation, organization and characteristics of computers. Computer solution of several numerical and non-numerical problems using one or more programming languages. *(Lec. 3) Pre: MTH 109 or equivalent high school mathematics for 201; 201, MTH 141 for 202.* Staff (M) for 201

**220 Computers in Society** *(I or II, 3)* History, operation, application, and social significance of computers. Emphasis on the role of the computer in society with respect to political, economic, cultural, social, and ethical aspects: its capabilities, potentials and dangers. *(Lec. 3) Pre: 201.* Staff (S)

**240 Introduction to Non-numerical Computation** *(I or II, 3)* Algorithm design methods, mathematical tools used in formal algorithm analysis. Time and storage efficiency, worst case and average behavior, optimality, correctness proofs. Case studies from sorting, searching, graphs, networks, relations. *(Lec. 3) Pre: 202, prior or concurrent registration in 283, MTH 215.* Staff

**283 Introduction to PL/I Coding** *(I or II, 1)* An intensive introduction to the syntax and use of the PL/I programming language. *(Lec. 1) Pre: 201 or 381.* Staff

**285 Introduction to COBOL Coding** *(I or II, 1)* An intensive introduction to the syntax and use of the COBOL programming language. *(Lec. 1) Pre: 201 or 381.* Staff

**302 Programming Languages and Compiler Design** *(I or II, 3)* Grammars and languages, lexical analysis, syntactic analysis, internal forms, symbol tables, run time storage administration. *(Lec. 3) Pre: 240, 283, 285, 311.* Staff

**311 Machine and Assembly Language Programming** *(I and II, 3)* Introduction to the principles of machine and assembly language programming. Internal machine representation of character, integer and floating point numbers. Logical operations on non-numeric data. *(Lec. 3) Pre: 202.* Staff

**350 Introduction to Numerical Computation** *(I or II, 3)* Finite precision arithmetic, floating point number systems, pitfalls in computation, efficient use of array storage, assessing algorithm efficiency, iterative processes, halving and doubling algorithms, built-in functions, diagnostic methods. *(Lec. 3) Pre: 202, MTH 215, 243.* Staff

**381 Introduction to FORTRAN Coding** *(I or II, 1)* An intensive introduction to the syntax and use of the FORTRAN programming language. *(Lec. 1) Not open to students with credit in 201.* Staff

**382 Introduction to Job Control Language** *(I or II, 1)* An intensive introduction to the syntax and use of the Job Control language used by the University's Academic Computing Center. *(Lec. 1) Pre: 202.* Staff

**411 Computer Organization and Programming** *(I and II, 3)* Logical structure of computer systems, information representation, instruction codes, arithmetic and logical operations, flow of control. Assembly language programming, input-output, subroutines, linkages, macros, conditional assemblers. *(Lec. 3) Pre: 311, and prior or concurrent registration in 382.* Staff

**412 Programming Systems** *(II, 3)* Structure of monitor and executive systems, time-sharing systems, real-time systems, input-output system, file organization and manipulations, command languages. *(Lec. 3) Pre: 411.* Staff

**413 Data Structures** *(I, 3)* Formal data structures. Algorithms for handling such common structures as arrays, linear lists, trees and multi-linked lists. Searching and ordering techniques. Data management systems. Data structures in programming languages. *(Lec. 3) Pre: 240, prior or concurrent registration in 382 and MTH 215.* Staff

**491 Directed Study in Computer Science** *(I and II, 1-3)* Advanced work in computer science. Conducted as supervised individual projects. *Pre: permission of department. S/U credit.* Staff

**492 Special Topics in Computer Science** *(I and II, 3)* Advanced topics of current interest in computer science. *(Lec. 3) Pre: permission of department.* Staff

**500 Scientific Applications of Digital Computers I** *(I, 3)*
**502 Theory of Algorithmic Languages and Compilers** *(II, 3)*
**505 (or ELE 505) Design of Digital Circuits** *(I, 3)*
**512 Advanced Programming Systems** *(I, 3)*
**515 Theory of Computation** *(I, 3)*
**525 (or IDE 525) Simulation** *(II, 3)*
**535 Information Organization and Retrieval** *(II, 3)*
**536 Database Management Systems** *(II, 3)*
**540 Analysis of Algorithms** *(I, 3)*
**551 Scientific Applications of Digital Computers II** *(II, 3)*
**581 (or ELE 581) Artificial Intelligence** *(I or II, 3)*
**582 (or ELE 582) Robotics** *(I or II, 3)*
**583 (or ELE 583) Computer Vision** *(I, 3)*
**591 Directed Study in Computer Science** *(I and II, 1-3)*
**592 Special Topics in Computer Science** *(I and II, 3)*

## Consumer Studies (CNS)

**210 (HMG) Management in Family Living** *(I and II, 3)* Interaction of resources, goals, and managerial processes in the home seen in the context of the larger community. Applications primarily in the area of human resources. *(Lec. 3) Pre: sophomore standing or permission of department.* Noring

**220 (HMG) Consumer in the Economy** *(I and II, 3)* Application of basic economic principles to consumer problems in a complex marketplace, buyer-seller relationships, effective consumer decision-making, effects

of government policies on consumers. *(Lec. 3) Pre: economics course.* Lown (S)

**320 (HMG) Personal Finance** *(I and II, 3)* Personal financial planning and decisions for attaining individual and family goals. Factors which affect, protect, and enhance financial security. *(Lec. 3) Pre: junior standing.* Christner and Lown

**340 (HMG) Family Housing** *(I, 3)* Evaluation and study of types of housing in relation to the family and community. Emphasis on socioeconomic factors, housing laws, and aesthetic qualities concerned with housing. *(Lec. 3)* Noring

**342 Housing for the Elderly** *(II, 3)* Aspects of housing and near environmental conditions and needs, alternatives, legislative programs and support services related to housing for the elderly. *(Lec. 3) Pre: HCF 220 or permission of instructor.* Noring

**350 (HMG) Consumer Purchasing of Durable Goods** *(II, 3)* Decision-making concerning selection of consumer durables relative to feature availability, resource depletion, and natural energy use. *(Lec. 2, Lab. 2)* Christner

**371 (HMG) Seminar in Home Management** *(II, 3)* Application and analysis of concepts of management in group living situations and assessment of community resources as they relate to use by individuals/families in resolving managerial problems. *(Lec. 3) Pre: 210, HCF 330 or SOC 312.* Noring

**401 Consumer and Managerial Problems of Families with Special Needs** *(II, 3)* Seminar to develop strategies for assisting families with unusual demands for consumer and managerial skills. Attention to such groups as unemployed, marginally employed, minorities, handicapped, elderly, and female-headed households. *(Lec. 3) Pre: a CNS (HMG) course, or an HSS course or HCF 330 or permission of instructor.* Christner

**420 (HMG) Consumer Protection** *(I, 3)* Effectiveness of diverse approaches to consumer protection. Analysis of techniques such as information disclosure, standards for products and services, government and private agencies, redress channels, and legislation. *(Lec. 3) Pre: 220 or 320 or permission of instructor.* Christner

**422 (HMG) Current Consumer Topics** *(II, 3)* Critical examination of current topics in consumer affairs. Includes issue and policy analysis; costs and benefits for consumers, business and government; implications for policy formation. *(Lec. 3) Pre: 220 or 320.* Lown

**470 (HMG) Special Problems** *(I and II, 2-4)* Special problems selected from home management theory, consumption economics, work simplification, and equipment depending upon the specific interest of students. *(Lab. TBA)* Staff

**532 (HMG) (or HED 532) Consumer Education** *(II, 3)*

**570 (HMG) Special Problems** *(I and II, 3)*

## Dental Hygiene (DHY)

*Chairperson:* Professor B. Wilson

**101 Pre-Clinical Dental Hygiene** *(I, 1)* Philosophies, concepts and precedures needed before beginning experience in dental hygiene clinic. Emphasis on the basic concepts and principles in preventive oral health care. *(Lec. 1)* Wilson

**125 Dental Morphology, Head and Neck Anatomy** *(I, 3)* Study of form and function of teeth and their related structures. A detailed study of the anatomy and physiology of the structures of the head and neck. *(Lec. 4, Lab. 2)* Bliss

**126 General and Oral Histology and Embryology** *(II, 3)* Cytology, development and microscopic anatomy of oral cavity. *(Lec. 2, Lab. 2) Pre: 125.* Persechino

**128 Periodontics** *(II, 1)* Classification of periodontal disease, clinical picture, causative factors, and types of treatment. *(Lec. 2)* Ross

**135 Technique-Clinical Dental Hygiene I** *(I, 1)* An introduction to knowledge and skills essential for the performance of dental hygiene services. Emphasis on principles of instrumentation and perfecting clinical competence on manikin heads and laboratory partners. *(Practicum 6, Lec. 1) Pre: permission of department chairperson.* Staff

**136 Clinical Dental Hygiene II** *(II, 2)* Development of clinical skills. Application of the basic principles of oral inspection, charting, radiology, fluoride application and dental health education. *(Practicum 14,* Lec. 1)* Staff

**141 Dental Assisting** *(I, 1)* Lectures, clinical observations, and practice devoted to methods of assisting dentists. *(Practicum 4)* Staff, Regional Dental Center, Newport

**227 General and Oral Pathology** *(I, 3)* Significance, signs, symptoms and relationship of general disease to oral disease. Stress on manifestation of oral pathology and clinical recognition of atypical or abnormal oral conditions and disease. *(Lec. 3)* Carlotti

**231 Roentgenology** *(I, 2)* Lectures, demonstrations and laboratory practice. Study of nature and behavior of X-rays, extra- and intra-oral radiographic techniques and procedures. Recognition and interpretation of information revealed by radiographic examination. *(Lec. 1, Lab. 2)* Wilson and Staff

**237 Clinical Dental Hygiene III** *(I, 2)* Continuation of 136. *(Practicum 20*)* Staff

**238 Clinical Dental Hygiene IV** *(II, 2)* Continuation of 237. *(Practicum 20*)* Staff

**244 Dental Materials and Operative Technique** *(II, 1)* Study of physical, chemical and mechanical properties of materials used in dentistry. Laboratory procedures develop skill in preparation, manipulation, and use of materials relevant to the practice of dental hygiene. *(Lec. – Practicum 3 for 8 weeks)* Bush

**246 Ethics, Jurisprudence, and Office Management** *(II, 1)* Dental office procedures with emphasis on patient recall programs. Laws and ethics relating to practice of dentistry and dental hygiene. *(Lec. 2)* Kershaw

**250 Dental Health Education** *(II, 2)* Educational philosophy, teaching methods and acquisition of skills in methods of research. Investigation, review, interpretation and critical evaluation of scientific literature as the basis for dental health education. *(Lec. 2)* Wilson

**252 Community Health** *(II, 2)* Philosophy and background of public health practice. Review of current health concepts, practice, needs, and problems. Emphasis on methods for promotion of optimal health for all. Supervised field experiences. *(Lec. 2) For concentrators only.* Wilson

**254 Survey of Dental Specialties** *(II, 1)* Survey of major specialties in dentistry: endodontics, pedodontics, orthodontics, and oral surgery. *(Lec. 2)* Feldman, Girasole, Nelson and Schwab

**260 Advanced Preventive Dentistry** *(II, 2)* Methodology of clinical and educational research. Interpretation of statistics, in-depth study of fluorides and dental disease. Consideration of the aging process and related problems. *(Lec. 3)* Yacovone

**462 Oral Care of the Aging and/or Chronically Ill** *(I, 3)* Practical approach for the health-related professional. Emphasis on recognition of oral disorders, oral health care strategies and principles of prevention for the aged and chronically ill. *(Lec., Field Study 3) Pre: ZOO 242 and HCF 220 or permission of instructor.* Saunders

## Earth Science (ESC)

*Chairpersons:* Professor Alexander (Geography and Marine Affairs) and Professor J. A. Cain (Geology)

**100 Environmental Geology**
See Geology 100. (N)

**101 Geological Field Trips**
See Geology 101.

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*Rotating

**104 (or GMA 104) The Atmospheric Environment** *(I and II, 3)* Introductory aspects of the earth's atmosphere and hydrosphere. The earth as a globe, weather systems, climate, and the hydrologic cycle. Reciprocal relationships between man and his physical environment are emphasized. *(Lec. 3) Not open to students who have passed GMA 101.* Havens

**105 (or GEL 105) Geological Earth Science** *(I and II, 3)* Introductory study for nongeology majors. Volcanism, earthquakes, mountain-building, ice ages, history of the earth, evolution of life. Current topics such as continental drift, seafloor-spreading, environmental geology, and lunar geology. *(Lec. 3) Not open to students who have passed GEL 103 or 104. 104 is not prerequisite to 105.* Staff (N)

**106 Introductory Geology Laboratory** See Geology 106.

**114 Introductory Physical Geography Laboratory** *(I and II, 1)* Introduction to spatial representation and analysis in physical geography. *(Lab. 2) Pre: prior or concurrent registration in 104.* Staff

**303 (301) (or GEL 303) Environmental Remote Sensing** *(II, 3)* Introduction to interdisciplinary aspects of environmental remote sensing, including image and non-image sensing applied to geographic mapping, land-use, forestry, geology, engineering, urban-industrial patterns, wildlife management, ecology. *(Lec. 2, Lab. 1) Pre: GEL 100, or 103, or 105 or RDV 100 or junior standing or permission of instructor.* Fisher and Staff

## Economics (ECN)

*Chairperson:* Professor Sabatino

**123 Elements of Economics** *(I and II, 3)* Survey of principles and institutions underlying the production and distribution of goods and services and the determination of income, employment and the general level of prices. *(Lec. 3) Not open to students who have passed 125.* Staff (S)

**125, 126 Economic Principles** *(I and II, 3 each)* Principles underlying the organization and functioning of the economic system. Description and analysis of institutions and market forces affecting the production and distribution of goods and services, business fluctuations, and international trade. *(Lec. 3) Pre: for 126, 123 or 125 or permission of department. 125 is not open to students who have passed 123.* Staff (S)

**180 Current Topics in Economics** *(I or II, 1)* A selected topic of current interest. May be repeated with permission of the department, providing the topic is not the same. *(Lec. 1)* Staff

**300 Radical Critiques of Contemporary Political Economy** *(II, 3)* Radical right and radical left critiques. Radical views on values, methodology, production planning, income distribution, economic power, the military-industrial complex, imperialism, and racial and sexual discrimination. *(Lec. 3) Pre: 123 or 125, or permission of instructor.* Rayack (S)

**302 Economic Development of the United States** *(I or II, 3)* Developmental factors in American economic life introduce students to the past and present business environment. *(Lec. 3) Pre: 123 or 126 or permission of department.* Brown and Staff

**327 Intermediate Economic Theory: Income and Employment** *(I or II, 3)* Measurement of national income. Theory of the determination of the general level of income, employment, and prices. Business fluctuations. *(Lec. 3) Pre: 123 or 126 or 590 or permission of instructor.* Staff

**328 Intermediate Economic Theory: Pricing and Distribution** *(I or II, 3)* Market conditions and forces affecting the pricing and production of goods and services, the allocation of resources, and the distribution of income. *(Lec. 3) Pre: 126 or permission of instructor.* Staff

**334 Money and Banking** *(I or II, 3)* Structure and functioning of monetary institutions. Analyses of monetary theories. The role of monetary policy. U.S. banking structure: its operations and functioning. *(Lec. 3) Pre: 126 or permission of instructor.* Barnett and Brown

**337 Business and Government** *(I or II, 3)* Historical and present attitudes and policies of various levels of government toward the changing structure of American business. Emphasis on legal and economic concepts of business activity. *(Lec. 3) Pre: 123 or 126 or permission of instructor.* Dirlam and Hellman

**338 International Trade and Policy** *(I or II, 3)* Basic theory and major institutions of international economic relations. Includes determinants of foreign trade, the balance of payments, foreign exchange, foreign investment, protection, and free trade (aid to underdeveloped countries). *(Lec. 3) Pre: 123 or 126 or permission of instructor.* Suzawa

**342 Public Finance** *(I or II, 3)* Examination of the theory and practice of public expenditures, revenues, and fiscal policy, with major emphasis on federal fiscal affairs. *(Lec. 3) Pre: 123 or 126 or permission of instructor.* Starkey

**351, 352 Assigned Work** *(I and II, 3 each)* Special work in economics when it can be arranged to meet the needs of individual students who desire independent work. *(Lec. 3) Pre: 123 or 126 or permission of instructor. S/U credit.* Staff

**361 A Survey of Economic Thought** *(I or II, 3)* Economic thought from Middle Ages to present; characteristics of classical, neo-classical and contemporary doctrinal developments. *(Lec. 3) Pre: 123 or 126 or permission of instructor.* Schurman (S)

**363 Economic Growth and Development** *(I or II, 3)* Basic problems in economic growth and development of so-called backward or pre-industrial countries. Emphasis on population trends, agrarian reforms, capital formation, international aid programs, respective roles of private and public enterprise. *(Lec. 3) Pre: 123 or 126 or permission of instructor.* Suzawa

**375 Introduction to Quantitative Methods I** *(I, 4)* Mathematical techniques used in modern economic theory. Linear algebra, the calculus of several variables, constrained maximization, and differential equations. Application to economic problems. *(Lec. 3, Lab. 2) Pre: 123 or 125, 126 and MTH 141, or permission of instructor.* Mead

**376 Introduction to Econometrics** *(I or II, 4)* Application of econometric methods to economic problems. Econometric tools applied to micro- and macro-economic problems. *(Lec. 3, Lab. 2) Pre: 126 or permission of instructor.* Ramsay

**401 Poverty in the United States** *(I or II, 3)* Economic analysis of the determinants and distribution of poverty in the U.S. Evaluation of social welfare programs and various other proposals for the elimination of poverty. *(Lec. 3) Pre: 123 or 126, or permission of instructor.* Latos

**402 Urban Economics** *(I or II, 3)* Analysis of selected economic problems of urban areas. Development of methodological approaches through discussion of policy issues. *(Lec. 3) Pre: 123 or 126, or permission of instructor.* Staff

**403 Theory and Topics in the Economics of Crime** *( I or II, 3)* Application of economics analysis to various aspects of criminal activity. Consideration of economic determinants of income generating crime, economic behavior of participants and cost to society. *(Lec. 3)* Barnett

**404 Political Economy of Inequality** *(I or II, 3)* An analysis of the mechanisms which generate and perpetuate inequality in American society. Special attention paid to labor markets, the educational system, and the state. *Pre: 126 or permission of instructor.* Starkey

**464 Comparative Economic Systems** *(I or II, 3)* Economic organization in capitalist and socialist countries with particular emphasis on Soviet-U.S. comparisons, market and planning mechanisms, industrial structure, growth rates, and allocation of economic resources. *(Lec. 3) Pre: 123 or 126, or permission of instructor.* Schurman

**503 Development of the United States Economy** *(I, 3)*
**512 History of Economic Analysis** *(II, 3)*
**515, 516 Economic Research** *(I and II, 1-3 each)*
**527 Macroeconomic Theory** *(I, 3)*
**528 Microeconomic Theory** *(I, 3)*
**532 Industrial Organization and Public Policy** *(II, 3)*
**538 International Economics: Theory and Policy** *(I or II, 3)*
**543 Public Finance and Fiscal Policy** *(I, 3)*
**552 Monetary Theory and Policy** *(II, 3)*
**566 Economic Planning and Public Policy in Developing Nations** *(II, 3)*
**575 Introduction to Mathematical Economics** *(I, 4)*
**576 Econometrics** *(II, 4)*
**590 Principles of Economics** *(I and II, 3)*
**595 Problems of Modernization in Developing Nations** *(II, 3)*

## Education (EDC)

*Chairperson:* Professor Long

**102 Introduction to American Education** *(I and II, 3)* Introduction to the fundamental structure, functions, and problems of American education. Emphasis on education as both a socio-cultural phenomenon and an embodiment of philosophical commitments. *(Lec. 3)* Staff (S)

**103 Introduction to Education** *(I and II, 3)* Parallels 102. Integrated series of professional laboratory experiences. *(Lec. 3, Lab. 1) Pre: permission of department.* Staff

**279 Career Development Seminar** *(I and II, 1)* Individualized approach to career concerns, skill identification, self-awareness, career development theory, decision-making. Emphasis on understanding long/short-term goals. *(Seminar)* Montgomery

**302 Topics in Educational Studies** *(I and II, 3)* Consideration of basic purposes, values, and changes in American education as a means of analyzing selected topics drawn from foundational studies in education. Topics vary. *(Lec. 3) Pre: sophomore standing or permission of instructor.* Staff

**312 The Psychology of Learning** *(I and II, 3)* Principles of psychology as related to learning and teaching processes. *(Lec. 3) Pre: PSY 113.* Staff (S)

**313 The Psychology of Learning** *(I and II, 3)* Parallels 312. Integrated series of professional laboratory experiences. *(Lec. 3, Lab. 1) Pre: 102 and PSY 113. Required for and open only to students admitted into the general teacher education curriculum.* Staff

**329 Music for the Elementary School Teacher**
See Music 329.

**367 School Health Program**
See Health 367.

**371 Educational Measurements** *(I and II, 3)* Aptitude, achievement tests, and other measuring instruments used in classification and guidance of pupils, improvements of instruction, and other activities of the teacher. Principles applied in construction and use of tests and to interpretation and evaluation of scores. *(Lec. 3) Pre: 312 or 313.* Staff

**372 Educational Measurements** *(I and II, 3)* Parallels 371. Integrated series of professional laboratory experiences. *(Lec. 3, Lab. 1) Pre: 102 and concurrent registration in 313. Required for and open only to students admitted into the general teacher education curriculum.* Staff

**401 Development and Utilization of Instructional Materials** *(I and II, 3)* Methods of developing and making classroom application of selected materials: non-projected, projected, and audio. Specific attention to utilization in the social sciences, English, reading, the natural sciences, the humanities, arithmetic, and mathematics. *(Lec. 1, Lab. 4) Pre: senior standing and six hours of education.* Howard

**403 History of Education** *(I, 3)* Study of main currents of educational thought in historical perspective; relevance of educational movements and practices of the past to the contemporary school. *(Lec. 3) Pre: junior standing.* Calabro

**407 Philosophy of Education** *(I and II, 3)* Examines influence of philosophical ideas upon education. Questions on reality, knowledge, and value examined from different views to analyze controversial issues in theory and practice. *(Lec. 3) Pre: junior standing.* Russo

**410, 411 Seminar and Supervised Field Practicum in Education of the Aging** *(I and II, 3 each)* Adult educational methods as applied to older adults, including pre-retirement education, current education programs for the elderly, and evaluation of educational activities with the aging. Supervised field practicum of 150 hours. *(Lec. 2, Lab. 3) Pre: 581 or permission of department.* Staff

**424 Teaching of Reading** *(I and II, 3)* Philosophy, materials and methods underlying the teaching of reading with special emphasis upon developing understanding. *(Lec. 3) Pre: 313 or graduate standing.* Bumpus and McGuire

**425 The Use of Trade Books in the Reading Program** *(I, 3)* Understanding and using children's literature as an extension of elementary school textbooks with emphasis upon broadening the classroom teacher's instructional philosphy. *(Lec. 3)* Staff

**427 Methods and Materials in Elementary Teaching I** *(I and II, 3)* Language arts/reading principles and practices of guiding children in skillful use of basic means of communication (speaking, listening, writing, and reading). *(Lec. 3) Pre: PSY 113 and 232, EDC 313, concurrent registration in EDC 428, permission of department. Open only to students in elementary education curriculum. Not for graduate degree program credit.* Nagel, Nally and Kelly

**428 Methods and Materials in Elementary Teaching II** *(I and II, 3)* Principles and practices of developing skills and knowledge in social studies, math, and science with elementary children. *(Lec. 3) Pre: PSY 113 and 232, EDC 313, concurrent registration in EDC 427, permission of department. Open only to students in the elementary education curriculum. Not for graduate degree program credit.* Nagel, Nally and Kelly

**430 Methods and Materials in Secondary Teaching** *(I and II, 3)* Principles of education and human sciences as related to curricular materials and classroom situations. *(Lec. 3) Pre: 102 and 313. PSY 232, senior standing, and permission of instructor. Open only to students admitted into the secondary education curriculum. Sectioned by academic major: business, English, mathematics, modern language, science, social studies. Sem. II: Business Administration students only. Not for graduate degree program credit.* Staff

**435 The Teaching of Composition**
See Writing 435.

**441 Methods and Materials of Teaching Business Subjects** *(I, 4)* Current trends in teaching office occupations and social business subjects. *(Lec. 4) Not for graduate degree program credit.* Staff

**444 Teaching of Agri-business and Natural Resources** *(I, 3)* Organization of instructional programs; development of resource units, teaching plans, methods, techniques, and occupational experience programs. *(Lec. 3) Pre: 103 and 313. Not for graduate degree program credit.* McCreight

**450 Introduction to Counseling**
See Human Development, Counseling and Family Studies 450.

**451 Death, Dying and Bereavement**
See Human Development, Counseling and Family Studies 421.

**461 The Learning Disabled Reader: Elementary** *(I or II, 3)* Identification of strengths and needs; constraints in teaching; understanding and implementing an Individualized Educational Prescription (IEP): planning, conducting, and evaluating instructional activities; parent conferences. *(Lec. 3) Pre: 424 or permission of department.* Staff

**462 The Learning Disabled Reader: Secondary** *(I or II, 3)* Introduction to the learning disabled adolescent; strengths and needs in content areas; planning, implementing, and evaluating appropriate subject matter assignments. *(Lec. 3) Pre: 429 or permission of department.* Staff

**478, 479 Problems in Education** *(I and II, 0-3 each)* Advanced work in education, conducted as seminars or as supervised individual projects. *(Lec. or Lab.) Pre: permission of department.* Staff

**480, 481 Problems in Reading/ Learning Disabilities** *(I and II, 0-3 each)* Individually planned work in reading instruction, conducted as seminars, supervised individual projects or inservice courses. *Pre: permission of department.* Staff

**484 Supervised Student Teaching** *(I and II)* Under selected and approved critic teachers, students participate in classroom teaching and other school activities for a period determined by credit to be earned. Areas include: secondary non-vocational, S/U credit; elementary education, S/U credit; home economics, S/U credit; resource development; business; music; theatre. *Pre: methods course(s) of department involved. Not for graduate degree program credit.* Staff

**485 Seminar in Teaching** *(I and II, 3)* Practicum for teachers, their immediate problems, use of resource materials, and cooperative help of other members of seminar. Areas include: secondary non-vocational, elementary education, home economics, resource development, business, music, physical education (S/U only), theatre. *(Lec. 3) Pre: concurrently with 484, permission of department. Not for graduate degree program credit.* Staff

**486 Student Teaching in Elementary Physical Education** *(I and II, 6)*
**487 Student Teaching in Secondary Physical Education** *(I and II, 6)*
**488 Student Teaching in Special Physical Education** *(I and II, 6)*
**489 Student Teaching in Health Education** *(I and II, 6)*

Under selected and approved critic teachers, students participate in classroom teaching and other school activities. *Pre: methods courses in the department. Not for graduate degree program credit.* Staff

**501 Comparative Education in International Perspective** *(I or II, 3)*
**502 The Modern Curriculum Movement** *(I, 3)*
**503 Education in Contemporary Society** *(II, 3)*
**504 Adult Basic Education** *(I and II, 3)*
**505 Principles and Practices of Leadership Development for Youth and Adult Programs** *(I or II, 3)*
**509 Critique of Public Policy in Human Services and Education** *(I and II, 3)*
**510 Practicum in Incorporating Televised Media** *(I, 3)*
**511 Evaluation of Film and Recorded Material** *(I, 3)*
**512 Organization and Administration of Audiovisual Programs** *(II, 3)*
**513 Research and Theory in Instructional Technology** *(II, 3)*
**514 Current Trends in Elementary Education** *(I, 3)*
**515 Discipline and Youth in Schools** *(I and II, 3)*
**516 Teaching English as a Second Language to Adults** *(II, 3)*
**520 Teaching of Arithmetic** *(I, 3)*
**521 Teaching Basic Reading to Adults** *(I or II, 3)*
**528 Teaching Language Arts** *(II, 3)*
**529 Foundations of Educational Research** *(I and II, 3)*
**530 Qualitative Evaluation** *(I or II, 3)*
**534 Mathematics in the Secondary School** *(II, 3)*
**539 Evaluation and Monitoring of Occupational Training Programs** *(I or II, 3)*
**540 (or PSY 540) Learning Disabilities: Assessment and Intervention** *(SS, 3)*
**541 Reading in Secondary School Content Subjects** *(I and II, 3)*
**543 Reading in the Open Classroom** *(I, 3)*
**544 Assessing Learning Disorders in Reading** *(I, 3)*
**545 Strategies for Teaching the Learning Disabled Reader** *(II, 3)*
**546, 547 Field Practicum in Reading** *(I and II, 3 each)*
**548 The Application of Secondary School Content Area Reading Skills** *(II, 3)*
**561 Analysis of Reading Disabilities** *(I, 3)*
**562 Techniques in Remedial Reading** *(II, 3)*
**563 Reading Programs for the Disadvantaged** *(I, 3)*
**564 Beginning Reading Programs** *(II, 3)*
**565 Analysis and Evaluation of Current Research in Reading** *(II, 3)*
**566, 567 Practicum in Reading** *(I and II, 3 each)*
**568 Reading and Learning Disabilities** *(I and II, 3)*
**569 Middle School Curriculum** *(SS, 3)*
**570 Elementary School Curriculum** *(II, 3)*
**571 The Secondary School Curriculum** *(II, 3)*
**572 Cooperative Supervision** *(I and II, 3)*
**574 Current Trends in Secondary Education** *(I and II, 3)*
**575, 576 Supervised Field Study and Seminar in Elementary or Secondary Education** *(I and II, 3 each)*
**577 Organization and Administration in Elementary School** *(I, 3)*
**580 Organizing and Administering Youth Programs** *(I or II, 3)*
**581 Organizing and Administering Programs of Adult Education** *(I or II, 3)*
**582 Curriculum Development in Vocational-Technical and Extension Education** *(I, 3)*
**583 Analyzing Community Needs and Resources for Youth and Adult Programs** *(I, 3)*
**584 The Adult and the Learning Process** *(I and II, 3)*
**585 Seminar on Leadership for Youth and Adult Programs** *(II, 3)*
**586, 587 Problems in Education** *(I and II, 0-3 each)*
**588, 589 Supervised Field Practicum and Seminar in Youth and Adult Education** *(I and II, 3 each)*
**591, 592 Problems in Reading/Learning Disabilities** *(I and II, 0-3 each)*
**594 Organization and Supervision of Reading Programs** *(II, 3)*
**595 Workshop on the Use of the Newspaper in the Classroom** *(SS, 1)*
**596 (or HCF 562) Organization Development in Education** *(II, 3)*

## Electrical Engineering (ELE)

*Chairperson:* Professor Jackson

**205 Microprocessor Laboratory** *(I, 3)* Hands-on familiarization with computer and microprocessor software and hardware. Computer architecture and interfacing with input and output devices. *(Lec. 1, Lab. 4) Pre: permission of instructor and MTH 141 which may be taken concurrently.* Staff

**209 Concepts in Electrical Engineering** *(I, 3)* Discussion of many important basic physical processes, principles and laws. Importance of precise vocabulary and language of description and communication. Translation of basic knowledge into technical applications, examples from many important areas in electrical engineering. *(Lec. 3) Pre: MTH 142.* Seely, Poularikas

**210 Introduction to Electricity and Magnetism** *(I, 3)* Static electric and magnetic fields; Gauss's and Coulomb's laws; capacitance and inductance. Behavior of electric charges in stationary and moving fields. Lumped vs. distributed paramenters, electric and mechanical circuit concepts, topological circuit principles, and circuit theorems. *(Lec. 3) Pre: MTH 142 and PHY 213.* Staff

**211 Linear Systems and Circuit Theory I** *(II, 3)* Application of Kirchoff's laws and mathematical models for circuit elements to predict responses of electrical circuits to input signals and to initial condition. Complexity is limited to first and second order differential equations. *(Lec. 3) Pre: 210 or PHY 214.* Staff

**214 Introductory E.E. Laboratory** *(I, 1)* Principles of measurement, theory of errors of measurement. Treatment and presentation of data. Concepts of modeling and models. Experimental practices and procedures. *(Lab. 3) Pre: 209 to be taken concurrently.* Staff

**215 Electrical Measurements** *(II, 2)* Methods of measurement, theory of operation and proper use of certain electrical instruments, nature and theory of errors of measurement, and treatment of data. *(Lec. 1, Lab. 3) Pre: 210 or PHY 214.* Staff

port required. *Pre: permission of department and completion of the junior year in electrical engineering. Not for graduate degree credit.* Staff

**496 Electrical Engineering Practice II** *(II, 6)* Industrial experience in electrical engineering at companies or government laboratories selected by department. Student works on a major design or other engineering project uder supervision of engineers from industry and URI faculty. *Pre: 495 and permission of department. Not for graduate degree credit.* Staff

**501 Linear Transform Analysis** *(I, 3)*
**502 Nonlinear System Analysis** *(I or II, 3)*
**503 (or MCE 503) Linear Control Systems** *(I or II, 3)*
**504 (or MCE 504) Optimal Control Theory** *(II, 3)*
**505 (or CSC 505) Design of Digital Circuits** *(I, 3)*
**506 Digital Signal Processing** *(II, 3)*
**508 Computer Architecture** *(I and II, 3)*
**509 Systems with Random Inputs** *(I or II, 3)*
**510 Communication Theory** *(II, 3)*
**511 Electromagnetic Fields** *(I, 3)*
**513 Solar to Electric Energy Conversion** *(II, 3)*
**514 Microwave Electronics** *(I or II, 3)*
**515 Quantum Electronics** *(I or II, 3)*
**516 Planetary Electrodynamics** *(I or II, 3)*
**520 Fourier Optics** *(I or II, 3)*
**531 Solid State Engineering I** *(I and II, 3)*
**532 Solid State Engineering II** *(I and II, 3)*
**535 Transistor Circuits** *(I and II, 3)*
**536 Semiconductor Electronics** *(I or II, 3)*
**538 Principles of Remote Sensing** *(I or II, 3)*
**542 Analog Filter Design** *(I or II, 3)*
**571 (or OCE 571) Underwater Acoustics I** *(I, 3)*
**575 Electroacoustical Engineering I** *(I and II, 3)*
**576 Electroacoustical Engineering II** *(I and II, 3)*
**580 (or PCL 580 or ASC 580) Experimental Animal Techniques**
**581 (or CSC 581) Artificial Intelligence** *(I or II, 3)*
**582 (or CSC 582) Robotics** *(I or II, 3)*
**583 (or CSC 583) Computer Vision** *(I, 3)*
**584 (or EST 584) Pattern Recognition** *(II, 3)*
**585 Clinical Engineering** *(I or II, 3)*
**586 Biomedical Electronics I** *(I or II, 3)*
**587 Biomedical Electronics II** *(I, 3)*
**588 Biomedical Engineering I** *(I, 3)*
**589 Biomedical Engineering II** *(I and II, 3)*
**591, 592 Special Problems** *(I and II, 1-3 each)*

## Engineering (EGR)

*Dean:* Professor Dally

**101 Introduction to Engineering** *(I and II, 1)* Survey of the field of engineering, the different branches in particular. Introduction to methods and means of computation for solving engineering problems. *(Lec. 1)* Staff

**102 Basic Graphics** *(I and II, 1)* Theory of orthographic projection and principles of descriptive geometry, construction of exact drawings of three-dimensional objects including auxiliary views, pictorial drawings, cross-sections and dimensioning, free-hand sketching. *(Lab. 3)* Bachelder and Staff

**114 Environmental Pollution Control** *(I or II, 1)* Sources, effects, and control of pollution. Problems involved in water, atmospheric, and solid waste pollution. Technological, political, and economic factors. *(Lec. 3 for one-third semester) Pre: high school chemistry or physics.* Sussman and Poon

**115 Structural Engineering: Past, Present and Future** *(I or II, 1)* Historical development of structural engineering, effects of building codes on present structures, structures of the future. *(Lec. 3 for one-third semester)* Marcus and Fang

**203 Engineering Graphics** *(I and II, 1)* Advanced theory of descriptive geometry with applications to engineering problems, including line and plane problems, plane curves, ruled, warped and double-curved surfaces, intersections and development, axonometric and perspective projectives. *(Lab. 3) Pre: 102.* Bachelder and Staff

**204 Technology and Society** *(I and II, 3)* Historical development of technology and its interrelationship with social conditions, including a survey of the technological basis of modern society. Technology and its importance for non-engineers and for engineers. Appreciation of their profession for engineers. No prior engineering or science required. *(Lec. 3)* Bradbury

## English (ENG)

*Chairperson:* Professor Pearlman

**103 Introduction to Literature** *(I and II, 3)* The experience of literature through readings in fiction, poetry, and drama. Discussion and critical writings of six to eight essays *(Lec. 3) Requires writing skills beyond the elementary level.* Staff (Cw)

**205 Creative Writing** *(I and II, 3)* Various types of creative composition: essays, stories, and poetry. Students analyze work by class members and by professional writers. Only students with an aptitude for writing should elect this course. *(Lec. 3) Pre: permission of instructor.* Clark, Mathews and Petrie

**241, 242 American Literature** *(I and II, 3 each) 241:* Selections from American Literature, beginnings to the Civil War. *242:* Selections from American literature, latter part of the nineteenth century to the present. *(Lec. 3) 241 not prerequisite for 242.* Staff (A)

**243 The American Short Story** *(I and II, 3)* Critical study of the short story in America from early nineteenth century to the present. *(Lec. 3)* Staff (A)

**251, 252 English Literature** *(I and II, 3 each) 251:* Selections from English literature, beginnings to 1798. *252:* Selections from English literature, 1798 to the present. Staff (A)

**261, 262 World Literature** *(I and II, 3 each)* Introduction to some masterpieces of literature other than English and American. *261:* Selective literary history of civilization revealed through Greek, Roman, Italian, and Spanish literature. *262:* Selections from great works of French, Russian, German, and Scandinavian literature. Reading is done in translation. *(Lec. 3) 261 is not prerequisite for 262.* Staff (A)

**263 Introduction to Poetry** *(I and II, 3)* Promotes intelligent reading of various forms of poetry which have developed through the ages. *(Lec. 3)* Staff (A)

**264 Introduction to Drama** *(I and II, 3)* Various forms of Western drama. Designed to promote an intelligent understanding of drama as a literary art form. *(Lec. 3)* Staff (A)

**265 Introduction to the Novel** *(I and II, 3)* Introduction to the novel form which will include appreciation of fictional themes and methods as well as significant shifts of mode; the comic, sentimental, Gothic, novel of purpose, and others. *(Lec. 3)* Staff (A)

**270 Literature of the Bible** *(II, 3)* Introduction to poetry and narrative in the Old Testament and the Apocrypha, primarily in the Authorized (King James) Version. *(Lec. 3)* Sorlien

**300 Literature into Film** *(II, 3)* Analysis of themes, techniques, and form in literature and film aimed at developing critical appreciation of printed and film narratives. Emphasis will alternate between fiction and drama. *May not be repeated.* Staff

**305 Advanced Creative Writing** *(II, 3)* Provides further training for students especially talented in creative writing. Increased emphasis on independent projects in longer forms of prose and poetry. *(Lec. 3) Pre: 205 and permission of department.* Clark, Mathews and Petrie

**310 Techniques of Critical Writing** *(I or II, 3)* Practice in the writing of literary criticism. Methods of literary analysis illustrated and applied to specific works. *(Lec. 3)* Staff

**330 Introduction to American English** *(I, 3)* A comparison of prescriptive and descriptive grammars and their effect on our attitudes concerning American English. The influence of contemporary language studies on literary criticism and the teaching of English. *(Lec. 3)* Arakelian

**220 Passive and Active Circuits** *(II, 3)* Electrical circuit laws and theorems, transient and steady state response, phasors, frequency response, resonance. Diode and transistor circuits, digital logic devices. *(Lec. 3) Not for students concentrating in electrical engineering. Pre: PHY 214 or ELE 210.* Daly

**221 Electronic Instruments and Electromechanical Devices** *(I, 3)* Amplifiers, frequency response, feedback, field effect transistors, operational amplifier applications, electrical measurements. Magnetic circuits, transformers, electromechanical transducers, and systems, DC and AC machines. *(Lec. 3) Not for students concentrating in electrical engineering. Pre: 220.* Daly

**300 Electrical Instrumentation for Biology and Health Sciences** *(I, 3)* Principles of operation and use of electrical instruments employed in medicine and biology. Designed principally for students in the respiratory therapy program. *(Lec. 2, Lab. 3) Pre: MTH 141 and PHY 112 or equivalent.* Staff

**312 Linear Systems and Circuit Theory II** *(I, 4)* Continuation of 211 including analysis of more complicated circuits by mesh and node methods, phasor methods for the sinusoidal steady state, and Laplace transform techniques. *(Lec. 3, Lab. 3) Pre: 211.* Staff

**313 Linear Systems** *(II, 3)* Fourier series, Fourier transform, bilateral Laplace transform, transfer function, transient and steady state response, natural response and stability, signal flow graphs, convolution integral, introduction to state-space analysis. *(Lec. 3) Pre: 312.* Staff

**322 Electromagnetic Fields I** *(I, 3)* Electrostatics and magnetostatics, forces on charged particles. Analysis employs vector algebra and vector calculus in orthogonal coordinates. Simple applications to engineering problems *(Lec. 3) Pre: MTH 243.* Staff

**323 Electromagnetic Fields II** *(II, 3)* Magnetostatics continued. Introduction to electrodynamics. Maxwell's equations, wave equation, plane wave propagation, reflection and refraction phenomena. *(Lec. 3) Pre: 322.* Staff

**331 Electrical Engineering Materials I** *(I, 3)* Properties of solids, chiefly semiconductors, which are utilized in modern electronic devices. The physics of these materials and devices is stressed, but some time is devoted to fabrication technology and applications. *(Lec. 3) Pre: PHY 341 or equivalent.* Staff

**342 Electronics I** *(II, 4)* Introduction to diode, transistor, FET and vacuum tube circuits, equivalent circuits, amplification, stability, small and large signal behavior. *(Lec. 3, Lab. 3) Pre: 211 and 215.* Staff

**391, 392 Honors Work** *(I and II, 1-3 each)* Independent study and seminar-type work under close faculty supervision. Discussion of advanced topics in electrical engineering in preparation for graduate work. *Pre: junior standing and permission of department.* Staff

*Prerequisites for all 400-, 500-, and 600-level electrical engineering courses: mathematics through calculus (MTH 243) and at least 6 credits in circuit theory and 3 credits in electromagnetic fields. Additional prerequisites as indicated with each course. Some circuits and fields prerequisites may be waived for 481, 482, 505, 537, 586, 587, 588, and 589 for students with suitable backgrounds.*

**401 Lasers, Optical Systems and Communication** *(I or II, 3)* Laser fundamentals and light amplification. Diffraction and Fourier optical transformations with applications to engineering. Optical signal processing. Holography and applications. Optical systems and communications. *(Lec. 3) Pre: 323 or equivalent.* Staff

**403 Optical Systems and Communications Laboratory** *(I or II, 3)* Optical measurements with applications to diffraction, refraction, spatial filtering, optical information processing and holography. *(Lec. 1, Lab. 4) Pre: 401, which may be taken concurrently.* Staff

**405 Digital Computer Design** *(II, 3)* Hardware implementation of digital computers. Arithmetic circuits, memory types and uses, control logic, basic computer organization, microprogramming, input/output circuits, microcomputers. *Pre: 342 or CSC 311.* Staff

**417 Direct Energy Conversion** *(II, 3)* Physical understanding of processes by which energy is converted directly to electricity. Fuel cells and thermoelectric, thermionic, photovoltaic, and magnetohydrodynamic generators. *(Lec. 3) Pre: background in electricity and magnetism, thermodynamics of fluid systems and modern physics; permission of instructor.* Staff

**427 Electromechanical Devices** *(I, 3)* Principles of electromechanical energy conversion. Development of models for stationary and rotating electromagnetic devices. Introduction to special transducers and sensors. *(Lec. 2, Lab. 3) Pre: 313, 322.* Staff

**432 Electrical Engineering Materials II** *(II, 3)* Continuation of 331. Further application of semiconductors and P-N junction devices and theory of dielectric and magnetic materials. *(Lec. 3) Pre: 331 or equivalent.* Staff

**433 Electrical Engineering Materials Laboratory** *(II, 3)* Supplements 331 and 432. Students fabricate simple devices, measure their electrical and/or optical properties, or study basic properties of some solid, usually semiconducting samples. Practical aspects of solid state engineering. *(Lec. 1, Lab. 4) Pre: credit or registration in 432.* Staff

**436 Communication Systems** *(II, 3)* Representation of signals and noise. Basic principles of modulation and demodulation. Waveform and digital transmission systems. *(Lec. 3) Pre: 312 and 313 or equivalent knowledge of linear circuit theory, elementary electronics and transform methods.* Staff

**443 Electronics II** *(I, 5)* Continuation of 342. Application of signal flowgraphs as an aid to design. Thermal stability of stages. Applications of circuit analysis program, ECAP. Design of multiple transistor circuits. Feedback. *(Lec. 3, Lab. 5) Pre: 342.* Staff

**444 Electronics III, Pulse and Digital Circuits** *(II, 4)* Extension of the fundamental ideas of 342 and 443 to the analysis and design of pulse forming and switching circuits. Piece-wise linear approach to the nonlinear behavior of electronic devices. *(Lec. 3, Lab. 3) Pre: 443.* Staff

**457 Feedback Control Systems** *(I, 3)* Fundamental techniques for the analysis and design of linear feedback systems. Stability, sensitivity, performance criteria, Bode diagrams, Nyquist criterion, root locus techniques, state variables, and compensation methods. *(Lec. 3) Pre: 313.* Staff

**458 Systems Laboratory** *(II, 3)* Analytical, experimental, and computer simulation studies of typical control, communication, and biosystems problems. *(Lec. 1, Lab. 4) Pre: 457.* Staff

**481, 482 Biomedical Engineering Seminar I and II** *(I and II, 1 each)* Selected topics in biomedical engineering research from current scientific literature. Presented by students and invited staff. *Pre: permission of department. 481 not prerequisite for 482.* Ohley or Jaron

**484 Modeling of Physiological Systems** *(II, 3)* Physiology of selected systems, development of dynamic models to describe their behavior. Projects concerned primarily with the nervous system. Data collected from initial laboratory experiments with animals used for later experiments with analog computer modeling. *(Lec. 2, Lab. 3) Pre: 345, MTH 141. In alternate years, next offered 1982-83.* Staff

**491, 492, 493 Special Problems** *(I and II, 1 each)* Special engineering problems assigned to student according to his or her interests and capabilities. *(Lec. or Lab.) Pre: permission of instructor.* Staff

**495 Electrical Engineering Practice I** *(I, II or SS, 3)* Industrial experience in electrical engineering at companies or government laboratories selected by department. Student works on a design or other engineering project under supervision of engineers from industry and URI faculty. Major written re-

**332 The Evolution of the English Language** *(I, 3)* The history of English from its Germanic origins, through Norman invasions, the Renaissance, and the Age of Enlightenment. Special attention to the cultural forces which molded a standard dialect. *(Lec. 3)* Arakelian

**345 Black Literature: 1700-1940** *(I or II, 3)* Survey of Afro-American literature 1700-1940. Social, political, and cultural thought of such writers as Wheatley, Chesnutt, Dubois, Toomer, Hughes, and growth of racial consciousness from slavery to the Harlem Renaissance. *(Lec. 3)* Clark

**346 Black Literature: 1940 to the Present** *(I or II, 3)* Intensive study of major contributions to black literature from 1940 to the present. *(Lec. 3)* Clark

**347 American Romanticism** *(II, 3)* Poetry and prose of the American Romantic Movement. Focus on Irving, Poe, Emerson, Thoreau, Hawthorne, Melville, and others. *(Lec. 3) In alternate years, next offered 1982-83.* Staff

**348 American Literature, Civil War-1914** *(I, 3)* Major developments in American Realism and Naturalism. Emphasis on the work of Twain, Howells, Crane, James, Dreiser. *(Lec. 3)* Staff

**349 American Literature since 1914** *(II, 3)* Poetry, drama, and fiction of the period during and since the First World War. Emphasis on major figures such as Frost, Eliot, Stevens, O'Neill, Faulkner, Hemingway and others. *(Lec. 3)* Staff

**360 Women and Literature** *(I and II, 3)* Critical study of selected topics. *(Lec. 3)* Stein and Hills

**366 Greek and Roman Drama** *(I, 3)* Survey of Greek and Roman drama with special emphasis on art and achievement of major dramatists: Aeschylus, Sophocles, Euripides, Aristophanes, Plautus, Terence, and Seneca. *(Lec. 3) In alternate years, next offered 1981-82.* Gullason (F)

**367 The Classical Epic** *(I, 3)* Survey of Greek and Latin epic poetry in translation, beginning with Homer and attempting to determine some principles of epic art. *(Lec. 3) In alternate years, next offered 1981-82.* Staff

**368 Development of the English Drama** *(I, 3)* Development of English drama from its beginnings to present day. Plays read will be selected on basis of their historical importance and intrinsic worth. *(Lec. 3) In alternate years, next offered 1981-82.* Staff

**370 The English Middle Ages** *(II, 3)* Introduction to various types of medieval literature, usually read in modern English versions. Chronicle and romance, lyric and satire, visionary and homiletic writings, drama. *(Lec. 3)* Malina, Neuse

**371 The English Renaissance** *(I, 3)* Early developments of sonnet form and blank verse as illustrated by work of Wyatt, Surrey, Sidney, and others. Attitudes and theories of period as expressed in More's *Utopia* and Bacon's *Essays* are examined in detail. *(Lec. 3) Pre: junior or senior standing. In alternate years, next offered 1982-83.* Neuse and Sorlien

**372 The Seventeenth Century** *(II, 3)* Poetical and prose works of Bacon, Johnson, Donne, Milton, and others. *(Lec. 3) In alternate years, next offered 1981-82.* Sorlien and Jacobs

**374 The Eighteenth Century** *(I, 3)* Major trends in fiction, poetry, and drama with emphasis on Swift, Defoe, Goldsmith, Boswell, Johnson, and Sterne. *(Lec. 3) Pre: junior or senior standing. In alternate years.* Reaves

**376 The Romantic Movement, 1798-1832** *(II, 3)* Major poetry and significant nonfiction prose of Wordsworth, Coleridge, Scott, Byron, Shelley, Hunt, Landor, and Keats. *(Lec. 3) Pre: junior, senior or graduate standing. In alternate years, next offered 1982-83.* Petrie and Tutt

**377 Early Victorian Literature** *(I, 3)* The poetry, non-fiction prose, and selected novels of the early and mid-Victorian period. Emphasis will be on the work of Tennyson, Browning, Arnold, Carlyle, Dickens, Thackeray, and others. *(Lec. 3) In alternate years, next offered 1981-82.* Goldman and Seigel

**378 Late Victorian and Edwardian Literature** *(II, 3)* Literature of the late nineteenth century and early twentieth century. Emphasis on Rossetti, Swinburne, Meredith, Hardy, Hopkins, Housman, Wilde, and others. *(Lec. 3) In alternate years, next offered 1982-83.* Goldman and Seigel

**379 Modern British Literature since 1914** *(II, 3)* Poetry, drama, non-fiction prose, and selected fiction of the modern period. Emphasis on the work of Conrad, Joyce, Lawrence, Woolf, Yeats, Auden, Thomas, and others. *(Lec. 3) Pre: junior or senior standing. In alternate years, next offered 1982-83.* Goldman, Mathews, and McCabe

**385 Women Fiction Writers** *(II, 3)* Analysis of the fiction of women writers. Emphasis on nineteenth-century, twentieth-century, or contemporary authors. Course may be repeated for credit when taken with different emphasis. *(Lec. 3)* Staff

**394, 395 Independent Study** *(I and II, 1-3 each)* Extensive individual study and research, culminating in a substantial essay. *(Lec. 3) Pre: permission of department. Total cumulative hours permitted: 6.* Staff

**399 Special Topics in Literature** *(I and II, 3)* Specialized topics in the study of literature offered by specialists in the field. *(Lec. 3) Fall 1981: The Recent Short Story.* Potter

**430 American English and Its Dialects** *(I, 3)* A study of the regional and social varieties of American English with emphasis on and field work in New England dialects. *(Lec. 3)* Arakelian

**436 The Language of Literature** *(II, 3)* An introduction to those linguistic theories which have recently been applied to literary style, meaning and evaluation. Intensive study of the language of a particular writer or work. *(Lec. 3) Pre: permission of instructor.* Arakelian

**440 Literary Heritage of New England to 1860** *(I, 3)* Literature of New England through the colonial, national, and romantic periods to the Civil War. Field trips will be taken to important literary sites. *(Lec. 3) Pre: 241 or permission of department. In alternate years, next offered 1981-82.* Schoonover

**444 The American Writer and the Negro** *(II, 3)* General survey of writings about Negroes in American literature by white as well as black authors. Study of representative works from all of American literature, providing an aesthetic and social view of the American Negro. *(Lec. 3)* Clark

**446 Modern American Drama** *(II, 3)* Major contributions and movements in modern American drama. *(Lec. 3)* Miller

**447 Twentieth Century American Poetry** *(I and II, 3)* Major contributions and movements in American poetry from 1900 to the present. *(Lec. 3) Not acceptable for master's program credit in English.* Goldman and Potter

**448 The Nineteenth Century American Novel** *(I, 3)* Survey of the American novel through nineteenth century. *(Lec. 3) Not acceptable for master's program credit in English.* Staff

**449 The Twentieth Century American Novel** *(I and II, 3)* Survey of the American novel since 1900. *(Lec. 3) Not acceptable for master's program credit in English.* Staff

**454 Modern British and European Drama** *(I, 3)* Critical study of representative plays by modern English, Irish, and continental playwrights. *(Lec. 3) In alternate years, next offered 1982-83.* Jacobs

**455 Twentieth Century British Poetry** *(I and II, 3)* Major contributions and movements in British poetry from 1900 to the present. *(Lec. 3) Not acceptable for master's program credit in English. In alternate years, next offered 1981-82.* Staff

**458 The British Novel** *(I, 3)* Survey of English novel through first quarter of nineteenth century. Emphasis on Defoe, Richardson, Fielding, Smollet, Sterne, and Austen. *(Lec. 3) Not acceptable for master's program credit in English. In alternate years, next offered 1981-82.* Staff

**459 The British Novel of the 19th Century** *(II, 3)* Study of such novels as *Wuthering Heights, Vanity Fair, Great Expectations, Middlemarch, Tess of the D'Urbervilles. Closed to graduate students.* Staff

**460 The British Novel of the 20th Century** *(II, 3)* Study of such novels as *Sons and Lovers, Portrait of the Artist, To the Lighthouse, Passage to India* and others. *Closed to graduate students. (Lec. 3)* Staff

**462 The Medieval and Modern Epic** *(II, 3)* The epic tradition with emphasis on Dante's *Divine Comedy* and Joyce's *Ulysses. (Lec. 3) In alternate years, next offered 1982-83.* Staff

**468 The European Novel to 1850** *(I, 3)* Major developments of European novel through early nineteenth century. Special attention to Cervantes, LeSage, Goethe, Stendhal, Balzac, and Gogol. *(Lec. 3) Not acceptable for master's program credit in English. In alternate years, next offered 1982-83.* Gullason

**469 The European Novel after 1850** *(II, 3)* Important contributions of nineteenth and early twentieth century novel. Special attention to Flaubert, Turgenev, Dostoevsky, Tolstoy, Zola, and Gide. *(Lec. 3) Not acceptable for master's program credit in English. In alternate years, next offered 1981-82.* Gullason (F)

**470 Chaucer** *(I, 3)* Selections from Chaucer's major poems, read in Middle English. *(Lec. 3) Not acceptable for master's program credit in English. In alternate years, next offered 1982-83.* MacLaine, Malina, and Neuse

**472, 473 Shakespeare** *(I and II, 3 each) 472:* Introduction to plays of Shakespeare as living theatrical productions. One or more examples from each main type. Character delineation, plot construction, and stagecraft devices emphasized. *473:* A second course in Shakespeare. Critical study of those plays not included in 472. *(Lec. 3) Pre: junior standing. 472 not prerequisite for 473. Not acceptable for master's program credit in English.* Barker, Hills, and Mathews

**474 Milton** *(II, 3)* Poetry and prose of John Milton, with special emphasis on *Paradise Lost. (Lec. 3) Pre: junior or senior standing and permission of department. Not acceptable for master's program credit in English. In alternate years, next offered 1981-82.* Neuse

**477 The Elizabethan Drama** *(II, 3)* Critical study of outstanding plays written by Shakespeare's predecessors, contemporaries and successors, with emphasis on Elizabethan playhouse practice. *(Lec. 3) Pre: junior or senior standing. In alternate years, next offered, 1981-82.* Barker and Hills

**478 English Drama of the Restoration and Eighteenth Century** *(I, 3)* Concentrated study of English drama 1660 to 1800 as represented by the plays of Dryden, Congreve, Goldsmith, Sheridan, and others. *(Lec. 3) In alternate years, next offered, 1982-83.* Kunz, Reaves, and Sorlien

**485 American Authors** *(I or II, 3)* Intensive study of the work of one or two outstanding American writers. May be repeated, barring duplication of writers being studied. *(Lec. 3) Fall 1981: O'Neill.* Staff

**486 British Authors** *(I or II, 3)* Intensive study of the work of one or two outstanding British writers. May be repeated, barring duplication of writers being studied. *(Lec. 3) Fall 1981: Burns and Byron.* MacLaine

**499 Senior Seminar** *(I and II, 3)* Intensive study of literature and literary criticism as a discipline through selected works and authors, English and American, culminating in a substantial research project. *(Lec. 3) Open only to seniors concentrating in English. Fall 1981: Romanticism – 19th Century, British and American.* Seigel

**510 Bibliography and Literary Research** *(II, 3)*
**530 History of the English Language** *(I, 3)*
**531 History of Critical Theory** *(II, 3)*
**532 Modern Literary Criticism** *(I, 3)*
**535 Old English** *(I, 3)*
**536 Problems in Linguistics and Literature** *(II, 3)*
**540 Modern American Novel** *(I, 3)*
**545 Problems in American Realism and Naturalism** *(I, 3)*
**546 Problems in American Romanticism** *(II, 3)*
**547 Early American Literature to 1800** *(I, 3)*
**548 American Poetry to 1900** *(I, 3)*
**549 Modern American Poetry** *(II, 3)*
**550 Middle English Literature** *(II, 3)*
**551 The Metaphysical Poets** *(I, 3)*
**554 Modern British Poetry** *(I, 3)*
**555 Modern British Novel** *(I, 3)*
**556 English Literature of the Sixteenth Century** *(I, 3)*
**557 English Literature of the Seventeenth Century** *(II, 3)*
**558 English Literature of the Eighteenth Century** *(I, 3)*
**559 English Literature of the Romantic Period** *(II, 3)*
**560 English Literature of the Victorian Period** *(II, 3)*
**561 Modern European Novel** *(II, 3)*
**570 Anglo-Irish Writers** *(II, 3)*
**571 Problems in Chaucer** *(I, 3)*
**573 Problems in Shakespeare** *(II, 3)*
**574 The Scots' Poetic Tradition through Robert Burns** *(II, 3)*
**575 Modern Southern Literary Renaissance** *(II, 3)*
**576 English Novel of the Eighteenth Century** *(I, 3)*
**577 English Novel of the Nineteenth Century** *(II, 3)*
**578 Problems in Milton** *(II, 3)*
**590 Selected Topics** *(I and II, 3)*

## Environmental Health Science (EHS)

*Chairperson:* Professor Worthen (Pharmacognosy and Environmental Health)

**562 Interdisciplinary Seminar** *(I, 2)*
**563 Public Health Administration** *(II, 3)*

## Experimental Statistics (EST)

*Chairperson:* Professor Hemmerle (Computer Science and Experimental Statistics)

**220 Statistics in Modern Society** *(I and II, 3)* Elementary concepts in sampling, polls, surveys, random samples. Foundations of statistical inference; estimation, comparison prediction. Statistics for the consumer, quality of data, credibility of statistical evidence. Environmental measurements and experiments. *(Lec. 3)* Staff (M)

**408 Statistical Methods in Research I** *(I and II, 3)* Descriptive statistics, presentation of data, averages, measures of variation, skewness, kurtosis. Elementary probability, binomial and normal distributions. Sampling distributions. Statistical inference, estimation, confidence intervals, testing hypotheses, linear regression, and correlation. *(Lec. 3) Pre: MTH 109.* Staff

**409 Statistical Methods in Research I** *(I and II, 3)* Same as 408, but for students who have better mathematical preparation. *(Lec. 3) Pre: MTH 142.* Staff

**412 Statistical Methods in Research II** *(II, 3)* Multiple linear regression and correlation analysis, curvilinear regression. Analysis of variance and covariance. Analysis of enumerative data. Some nonparametric methods. *(Lec. 3) Pre: 408 or 409.* Staff

**413 Data Analysis** *(II, 3)* Exploring data from experimental trials, sample surveys, multivariate studies; weighing chances, detecting patterns, identifying outliers, finding models; elementary computational procedures. *(Lec. 3) Pre: 408 or 409 and CSC 201.* Staff

**491 Directed Study in Experimental Statistics** *(I and II, 1-3)* Advanced work in experimental statistics. Conducted as supervised individual projects. *Pre: permission of department. S/U credit.* Staff

**492 Special Topics in Experimental Statistics** *(I and II, 3)* Advanced topics of current interest in experimental statistics. *(Lec. 3) Pre: permission of department.* Staff

**500 Nonparametric Statistical Methods** *(II, 3)*
**501 Analysis of Variance and Variance Components** *(I, 3)*
**502 Applied Regression Analysis** *(I, 3)*
**517 (or PSY 517) Small N Designs** *(II, 3)*

**520 Fundamentals of Sampling and Applications** *(II, 3)*
**532 (or ASC 532) Experimental Design** *(II, 3)*
**541 Multivariate Statistical Methods** *(I, 3)*
**542 Discrete Multivariate Methods** *(II, 3)*
**550 Ecological Statistics** *(I, 3)*
**576 (or ECN, REN 576) Econometrics** *(I, 3)*
**584 (or ELE 584) Pattern Recognition** *(I or II, 3)*
**591 Directed Study in Experimental Statistics** *(I and II, 1-3)*
**592 Special Topics in Experimental Statistics** *(I and II, 3)*

## Film Studies

*Committee Chairperson:* Associate Professor Strom

**Art**
374 Topics in Film and Photography

**English**
300 Literature into Film

**History**
358 Recent America in Film

**Foreign Language Film**
327 Foreign Narrative Film
328 Rhetoric of Film

## Finance (FIN)

*Acting Chairperson:* Associate Professor Lord (Finance and Insurance)

**301 (321) Financial Management** *(I and II, 3)* An analysis of the investment and financing issues facing large and small corporate and non-corporate business. Emphasis is on financial planning and decision making. *(Lec. 3) Pre: ECN 126, ACC 202, and MGS 202 or permission of instructor.* Staff

**322 Security Analysis** *(I and II, 3)* Problems in investing funds from the point of view of individual and institutional investors. Particular attention is given to analysis of current investment theories. *(Lec. 3) Pre: 301 or concurrent with 301.* Staff

**331 (396) Financial Institutions and Markets** *(I and II, 3)* Comprehensive analysis of financial institutions and the markets in which they operate. Emphasis on the internal operations of the institutions. *(Lec. 3) Pre: ECN 126, ACC 202, and MGS 202 or permission of instructor.* Staff

**341 Fundamentals of Real Estate** *(I and II, 3)* Analysis of real estate principles. An examination of land utilization, valuation, financing techniques, urban development, property rights, markets, and government regulation. *(Lec. 3) Pre: ECN 126.* Staff

**401 (495) Advanced Financial Management** *(I or II, 3)* Intensive research on selected current topics relating to the financial management of the firm. *(Lec. 3) Pre: 301 or permission of instructor. Not for graduate credit.* Staff

**420 Speculative Markets** *(I and II, 3)* Examination of the concepts of forward pricing and its applications to the area of commodity and financial futures and options. *(Lec. 3) Pre: 301 or permission of instructor.* Staff

**425 (440) Portfolio Theory and Management** *(I and II, 3)* Examination of portfolio theory and current portfolio management practices from the individual and institutional view. Techniques for portfolio building, management, and performance evaluation are discussed. *(Lec. 3) Pre: 322 or permission of instructor.* Staff

**431 (496) Advanced Financial Institutions and Capital Markets** *(I or II, 3)* Intensive research on selected current topics relating to financial institutions and markets. *(Lec. 3) Pre: 301, 331 or permission of instructor. Not for graduate credit.* Staff

**433 Bank Financial Management** *(I, 3)* Nature of the financial decisions facing the management of an individual bank. Current bank financial practices, research, and appropriate banking models considered. *(Lec. 3) Pre: 301, 331 or permission of instructor.* Staff

**442 (342) Real Estate Finance** *(I or II, 3)* The methods and instruments used to finance real estate; the terms and sources of funds; investment opportunities and risk analysis in real estate. *(Lec. 3) Pre: 301 or permission of instructor. Not for graduate credit for students in the College of Business.* Staff

**452 Multinational Finance** *(I or II, 3)* Methods of financing multinational corporations. Foreign exchange, translation of financial statements, multinational funds flow and international liquidity, international financial reporting and tax policy, international money, stock and bond markets. *(Lec. 3) Pre: 301 or permission of instructor. Not for graduate credit for students in the College of Business.* Staff

**460 (306) Managerial Economics** *(I or II, 3)* Applications of economic theory and method to business problems relating to capital budgeting, demand, production, cost, and financial forecasting. Emphasis is on managerial decision making. *(Lec. 3) Pre: 301 or permission of instructor. Not for graduate credit for students in the College of Business.* Staff

**491, 492 Directed Study** *(I and II, 1-3 each)* Directed readings and research work involving financial problems under the supervision of members of the staff. Plan of study required. *Pre: permission of instructor. Not for graduate credit for students in the College of Business.* Staff

**540 Theory of Finance** *(I and II, 2)*

## Fisheries and Marine Technology (FMT)

*Chairperson:* Associate Professor Recksiek

**013 Shipboard Work** *(I, 3)* Principles and practices of vessel operations. Basic navigation, shiphandling, routine and emergency procedures. Introduction to vessel systems. Actual operations in port and at sea. Radiotelephone communications including preparation for FCC licensing. *(Lec. 1, Lab. 6)* Gamache and Stout

**014 Shipboard Work II** *(II, 1)* Work aboard training vessels at sea and in port. Rigging and working common gear used in the commercial fishing industry. *(Lab. 3) Pre: 013, 101 and 118.* Gamache

**020 Practical Twinework** *(I, 1)* Development of practical twinework skills with major emphasis on mending and patching wings, bellies, and other net sections. Introduction to webbing construction and basic net configurations. *(Lab. 3)* Hillier

**101 Shipboard Safety** *(I, 3)* Fire prevention, firefighting, accident prevention, and first aid medical treatment at sea; marine distress and emergency communications; abandon-ship, search-and-rescue operations. *(Lec. 3)* Stout

**110 Marine Technology** *(II, 4)* Application of basic principles of statics, dynamics, heat, light and sound to problems encountered in vessel operations, fishing gear, fish handling, and engineering systems. *(Lec. 3, Lab. 3) Pre: MTH 109.* Staff

**113 Vessel Operations** *(II, 1)* Conduct and handling of vessels and small craft with emphasis on procedures and seamanship for safe and efficient operation. Actual operations in port and at sea. *(Lab. 3) Pre: permission of department.* Staff

**118 Introduction to Commercial Fisheries** *(I, 3)* Survey of world, United States, New England fisheries; commercial species, exploitation and use. Introductory fisheries science. Principal commercial fishing methods, vessels, and gear. *(Lec. 3)* Recksiek

**121 Fishing Gear I** *(II, 3)* Detailed study of bottom trawls; emphasis on construction, repair, and use of different rigs and net designs. *(Lec. 2, Lab. 3) Pre: 013.* Hillier

**131 Seamanship** *(II, 3)* Principles and practice of seamanship. Watch standing, vessel maneuvering, rules of the road. Vessel maintenance, rigging safety, wire and fiber rope work. *(Lec. 2, Lab. 3) Pre: 013, 101 or permission of instructor.* Stout

**222 Fishing Gear II** *(II, 2)* Detailed study of the purse seine, midwater trawl, gillnet, trap, longline, and dredge. *(Lec. 2) Pre: 121.* Recksiek

**223 Fishing Gear Construction** *(II, 1)* Construction and repair of representative commercial fishing gear types. Study of hanging, tapering and rigging principles. *(Lab. 3) Pre: concurrent registration in 222.* Hillier

**235 Fisheries Meteorology** *(II, 2)* Basic practical meteorology and weather forecasting for the mariner. Tropical revolving storms; icebergs, ice, and icing-up conditions. World meteorological organization. *(Lec. 2) Not open to students who have taken GMA 403.* Recksiek

**241 Diesel Engineering Technology** *(I, 4)* Detailed study of marine diesel engines. Emphasis on principles and practice of operation, maintenance, and testing of systems, engines and components. *(Lec. 3, Lab. 3) Pre: 110 or PHY 111 or permission of instructor.* Wing

**242 Fluid Power Technology** *(II, 4)* Detailed study of fluid power systems with application to marine use. Emphasis on principles and practice of design, selection, operation, and maintenance of systems and components. *(Lec. 3, Lab. 3)* Wing

**261 Marine Electronics** *(I,4)* Basic electricity applied to fishing. Basic solid state and vacuum tube electronics, DC and AC machinery, ship wiring, communications, depth and fish finders, radar, electronic navigation systems. Noise control, siting, and preventive maintenance of equipment. *(Lec. 3, Lab. 3) Pre: MTH 109, FMT 110 or PHY 112.* Staff

**281 Navigation I** *(I, 4)* Chartwork and dead reckoning. Tides, current and wind effects. Compass error and the deviascope. Position by observation and computation. Navigational instruments and sailings. *(Lec. 2, Lab. 4) Pre: MTH 109.* Stout

**293 Fishing Operations Practicum** *(II, 1)* Fishing vessel operation; planning and working nearby fishing grounds for principal commercial species; rigging and handling gear and vessel. Conducted at sea in nearby waters. *(Pract. 6) Pre: 014, 121 and 131.* Gamache and Hillier

**351 Fish Preservation** *(I, 3)* Introduction to microbiology and biochemistry of fish spoilage. Preservation methods at sea and ashore including icing, mechanical refrigeration, freezing, salting, smoking, dehydration, canning, plant sanitation, and quality control. *(Lec. 3)* Mortimer

**371 Ship Technology** *(II, 3)* Principles of naval architecture and ship construction applied to smaller vessels, with special emphasis on fishing craft. Basic ship geometry and calculations, stability, powering, and propellers. Construction methods and materials, vessel planning. *(Lec. 3) Pre: MTH 109, PHY 111 or FMT 110, or permission of instructor.* Stout

**382 Navigation II** *(II, 4)* Celestial navigation and nautical astronomy. Position fixing and compass error determination by observation of celestial bodies. The sextant and other navigational instruments. Electronic aids to navigation *(Lec. 3, Lab. 3) Pre: 261, 281 or permission of instructor.* Stout

**391, 392 Special Problems and Independent Study** *(I and II, 1-3 each)* Special work to meet individual needs of students in various fields of fisheries and marine technology. *(Lec. and/or Lab. according to nature of project) Pre: permission of department.* Staff

**393 Fishing Operations** *(II, 3)* Commercial fishing procedures as they relate to the vessel operator, in the use of navigation, engineering, vessel layout, economics, marketing, fishing gear, accounting, and onboard fish processing. *(Lec. 3) Pre: 281 and 293.* Gamache

**416 Marine Transportation** *(II, 3)* Marine transport and the carriage of seaborne cargoes: trade and cargo patterns, ship types, international and governmental organizations, business, legal and insurance aspects, position of U.S. merchant marine ports. *(Lec. 3) Pre: permission of instructor.* Staff

**452 Industrial Fishery Technology**
See Animal Science 452.

**518 Marine Fisheries Technology** *(I, 3)*
**521 Fishing Gear Technology** *(II, 3)*
**591, 592 Special Problems** *(I and II, 1-3 each)*

## Food Science & Technology, Nutrition and Dietetics (FSN)

*Chairperson:* Professor Rand

**150 Food in Affluence and Poverty** *(I, 2)* Relationships between food and current problems including the world food problem, hunger and malnutrition, food fads and misinformation, food processing and additives, food ecology, food and nutrition improvement programs. *(Lec. 3)* Staff (S)

**201 Introduction to Food Study** *(I and II, 3)* Basic principles of food selection in today's market and preparation to retain maximum nutritive values and palatability. *(Lec. 2, Lab. 3) Pre: CHM 124 or 227.* Brown

**207 General Nutrition** *(I and II, 3)* Fundamental concepts of the science of nutrition with application to world, community and personal aspects. *(Lec. 3)* Staff (N)

**237 Introductory Food Science** *(I, 3)* Survey of basic principles of food science and technology. *(Lec. 3)* Rand

**307 Nutrition and Aging** *(II, 3)* Nutrition of the elderly as affected by metabolic and physiologic factors in aging. Study of the nutritional requirements and status of the elderly as well as the effectiveness of nutrition support systems. *(Lec. 3) Pre: 207 or HCF 220, BIO 102 or equivalent. In alternate years, next offered spring, 1982.* Eshleman

**308 Nutrition in Growth and Pregnancy** *(I, 3)* Examines current issues in maternal and child nutrition as related to growth and physical development. Discusses specific nutrition-related problems including development of food habits, food consumption patterns, and nutrient requirements. *(Lec. 3) Pre: 207, BIO 102 or equivalent. In alternate years, next offered fall, 1982.* Caldwell

**309 Nutrition in Obesity and Weight Control** *(I or II, 3)* Etiology of weight control examined, emphasis upon the physiological basis of energy balance. Abnormal eating behavior leading to obesity or undernutrition studied, and management protocol evaluated. Nutritionally adequate and effective reducing diets emphasized. *(Lec. 3) Pre: 207, BIO 102.* Caldwell

**331 Advanced Food Study** *(I and II, 3)* Food systems. Physical and chemical changes occurring in food during preparation, serving and storage. Laboratory application, including assessment of food quality *(Lec. 2, Lab. 3) Pre: 201 or permission of instructor.* Patel

**333 Quantity Food Production** *(I and II, 3)* Application, analysis, and evaluation of producing, distributing, and serving quality food in quantity. Experience in a food service facility. *(Lec. 1, Lab. 4) Pre: 201, MIC 201 or 211, senior standing, or permission of department.* Goshdigian

**334 Quantity Food Purchasing and Cost Control** *(I or II, 3)* Production, distribution, storage, cost analysis of food supplies to serve as basis for institutional purchasing by specification. Investigation and analysis of existing purchasing systems. *(Lec. 3) Pre: previous or concurrent registration in 333 and senior standing, or permission of department.* Goshdigian

**335 Food Service Management** *(I or II, 3)* Administrative responsibilities in organizing, planning, analyzing, controlling, and evaluating. Technical operations of subunits in relation to the whole in food service systems. *(Lec. 3) Pre: 201, 307 and junior standing, or permission of department.* Goshdigian

**345 (or LIB 345) Readings and Reports in Nutrition** *(II, 3)* Survey of literature and available resource materials. Written reports and discussion of scientific, social, regulatory, and political developments affecting nutritional status and health. *(Lec. 3) Pre: 207 or 237 or permission of department.* Dymsza and J. F. Sieburth

**347 Nutritional Evaluation of Food Processing** *(I, 3)* Effect of processing from origin to consumption upon the nutrient content of food. Emphasis on relationship between

food processing and nutrient retention and availability. *(Lec. 3) Pre: 207, 237, organic chemistry.* Staff

**378 Sensory Evaluation of Foods** *(I, 3)* nature of the sensory response; chemistry of compounds responsible for flavor and odor; measurement of taste, odor, color, and texture; design and methodology of panel testing. *(Lec. 2, Lab. 2)* Patel and Cosgrove

**421 Food Analysis** *(I, 4)* Principles and procedures for the chemical and physical analysis of foods. Emphasis on the determination of common food constituents and the instrumentation for their analysis. *(Lec. 1, Lab. 6) Pre: 431.* Stauffer

**431 Biochemistry of Food** *(I, 3)* Introduction to the chemistry and biochemistry of the essential components common to foods of plant and animal origin. *(Lec. 3) Pre: BCP 311 or equivalent.* Stauffer

**432 Food Processing** *(II, 3)* Changes involved in behavior of foods in unit operations such as fermentation, canning, irradiation, freezing, dehydration, and enzyme technology for processing and preservation. *Pre: 431 and MIC 211.* Rand and Stauffer

**433 Food Quality** *(II, 3)* Technological problems of procurement, manufacture, transportation, grading, packaging, and storage of food products. Field trips required. *(Lec. 2, Lab. 2) Pre: 431 and MIC 211.* Cosgrove

**438 Food Chemistry Laboratory** *(II, 3)* Principles and techniques of basic and applied food research. Investigation of special food problems. Writing and evaluation of technical reports on research findings. *(Lec. 1, Lab. 6) Pre: 431 or permission of department.* Staff

**441 Advanced Human Nutrition** *(I, 3)* Comprehensive study of principles of nutrition. Physiological and metabolic processes and interrelationships involving nutrients. Factors affecting nutritional health status and requirements during life span. *(Lec. 3) Pre: 207, CHM 124, ZOO 242, BCP 311 or permission of department.* Caldwell

**444 Nutrition and Disease** *(II, 3)* Effect of disease on metabolism and nutritional requirements, implications for dietary change and factors affecting acceptance of such change. *(Lec. 3) Pre: 441 or permission of department.* Caldwell

**447 Food Engineering I**
See Chemical Engineering 447.

**451, 452 Field Experience in Food and Nutrition** *(I and II, 1-3 each)* Individual supervised field experiences and seminar in community, educational, government, health-oriented, or commercial activities and services related to food and nutrition. *(Lec. and Lab.) Pre: permission of department. Maximum total of 6 credits. Not for graduate degree program credit.* Staff

**456 Community Nutrition** *(I and II, 4)* Assessment of the role of nutrition and food behavior in community health; study of current nutrition programs; development of an advocacy role in nutrition legislation; program planning, implementation, evaluation. *(Lec. 4) Pre: 441 and 444 (concurrent) or permission of instructor.* Eshleman

**461 Food Safety** *(II, 3)* Safety and status of food-borne substances and additives. Chemical-biologic mechanisms and factors influencing toxicity. Toxicological testing methods. Risks vs. benefits. Legal and regulatory aspects. *(Lec. 3) Pre: 431 or permission of instructor.* Staff

**472 Plant Biochemistry** *(II, 3)* Basic biochemistry of plant metabolism with emphasis on laboratory study of plant constituents. *(Lec. 2, Lab. 3, TBA) Pre: organic chemistry and junior standing.* Staff

**491, 492 Special Projects** *(I and II, 1-3 each)* Advanced work under supervision of staff member. Arranged to suit individual requirements of student. *Pre: senior standing and permission of department.* Staff

**502 Advanced Experimental Foods** *(I, 3)*
**503 Food Science and Nutrition Research Methods** *(I and II, 4)*
**505 Marine Foods Seminar** *(I and II, 1)*
**511, 512 Food Science and Nutrition Seminar** *(I and II, 1 each)*
**521 Pesticide Chemistry** *(I, 3)*
**526 (or MCH 526) Lipid Chemistry** *(I, 3)*
**531 (or EDC 531) Teaching of Nutrition** *(I or II, 3)*
**532 Seafood Quality** *(II, 3)*
**542 Minerals and Vitamins** *(II, 3)*
**548 (or CHE 548) Food Engineering II** *(II, 3)*
**549 (or CHE 549) Food and Biochemical Engineering III** *(II, 3)*
**575 (or CHE 575) Biochemical Engineering II** *(II, 3)*
**591, 592 Special Research Problems** *(I and II, 2-4 each)*

## Foreign Language Film (FLF)

**327 Foreign Narrative Film** *(II, 3)* The cultural significance of the film in Europe, Latin America, Africa, and Quebec, studied through selected motion pictures with English subtitles, and assigned readings. *(Lec. 2, Lab. 4) Not for credit in any concentration in the Department of Languages. In alternate years, next offered spring 1983.* Staff

**328 Rhetoric of Film** *(II, 3)* Comparative study of major works of two or three film directors of international stature, studied through discussion of selected foreign language motion pictures with English subtitles, lectures and assigned readings. *(Lec. 2, Lab. 4) Not for credit in any concentration in the Department of Languages. In alternate years, next offered spring 1982.* Staff

## Forest and Wildlife Management (FOR)

*Chairperson:* Associate Professor Gould

**301, 302 General Forestry** *(I and II, 3 each)* Scope of forestry, professional opportunities, forest conditions and problems. Small forest management covering identification and characteristics of R.I. forest trees, surveying and inventory of tracts, management of various R.I. timber types, forest protection and marketing of forest products. Laboratory field application of forest techniques. *(Lec. 2, Lab. 2) Pre: for 302: 301.* Brown and Gould

**305 General Wildlife Management** *(I, 3)* Introduction to wildlife management. Typical forest and farm game species. Forest and farm habitats analyzed, management priniciples emphasized. *(Lec. 2, Lab. 2) Pre: BOT 111, ZOO 111 and ZOO (BOT) 262.* Gould

**306 General Wildlife Management** *(II, 3)* Continuation of 305 with introductory wetlands management. Typical furbearers, waterfowl, and fish. Emphasis on habitat management. *(Lec. 2, Lab. 2) Pre: 305.* Gould

**401 Forest Influences** *(I, 3)* Effects of forest vegetation on local climate, the hydrologic cycle, soil, and man; relationships to water yield and runoff. Measurement of precipitation, runoff, and other variables. *(Lec. 3) Pre: junior standing; EST 408 or 222; BOT 323 recommended. In alternate years.* Brown

**402 Wildlife Populations** *(II, 3)* Ecological presentation of characteristics of exploitable animal populations and mechanisms that regulate their numbers through time. Methods used in wildlife population research. *(Lec. 2, Lab. 3) Pre: ZOO 111 or BIO 102; ZOO 463 recommended.* Husband

**423 Wetland Ecology** *(I, 4)* Origin, development, and characteristics of inland and tidal wetlands. Topics include geology, hydrology, soils, plant ecology, succession. Wetlands of North America and the world, with emphasis on the glaciated northeast. *(Lec. 2, Lab. 4) Pre: BOT (ZOO) 262 and ESC 105 or GEL 103; BOT 323 or permission of instructor.* Golet

**424 Wetlands and Land Use** *(II, 3)* In-depth study of land use involving wetlands, values of wetlands to society and mechanisms for wise management of wetlands. Wetland classification, inventory, evaluation, legislation. Field project on wetland evaluation. *(Lec. 2, Lab. 3) Pre: 423.* Golet

**491, 492 Special Projects** *(I and II, 1-3 each)* Special work to meet the needs of individual students in the fields of forestry and wildlife management. *(Lec. and/or Lab. according to nature of project) Pre: permission of department.* Staff

## French (FRN)

*Section Head:* Associate Professor Morello

**101, 102 Elementary French** *(I and II, 3 each)* Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. *(Lec. 3) Pre: no prior French for 101; 101 for 102.* Staff (F)

**103, 104 Intermediate French** *(I and II, 3 each)* Development of facility in reading texts of moderate difficulty; supplemented by futher work in grammar, conversation, and composition. *(Lec. 3) Pre: 102 or 131 for 103; 103 for 104.* Staff (F)

**113 Intensive French III** *(I and II, 4)* Grammar review, further exercise in conversation and reading of easy texts. *(Lec. 4) Two or more years of high school French or permission of instructor. May not be taken concurrently with 103, 104.* Staff

**114 Intensive French IV** *(I and II, 4)* Development of facility in reading texts of moderate difficulty, with continued practice in writing and speaking. *(Lec. 4) Pre: 113 or two or more years of high school French or permission of instructor. May not be taken concurrrently with 103, 104.* Staff

**123, 124 French for Reading Knowledge** *(I and II, 3 each)* Grammar and vocabulary emphasized in the first semester, reading of texts of increasing difficulty in the second semester. 123 presupposes no previous knowledge of French. *124 may be taken without 123 if the student has had two years of high school French or equivalent.* Staff

**131 Refresher Course in French** *(I and II, 3)* Rapid one-semester review of beginning French structures and vocabulary. For students with one or two years of high school French who are not ready for 103 or higher level. *(Lec. 3) Pre: one or two years of pre-college French or permission of section head. Not open to students who have passed 101 or 102. Not for concentration credit.* Staff

**205, 206 Conversation and Composition** *(I and II, 3 each)* Comprehension of spoken French; speaking with ease and an acceptable accent on assigned topics; oral reports on articles read in newspapers and periodicals, and frequent written compositions. *(Lec. 3) Pre: 104 or equivalent.* Staff

**208 Preparation for Study in France** *(II, 3)* Required of students participating in Orleans Exchange Program. Emphasis on listening comprehension and oral expression through class discussion, visiting lecturers, and language laboratory. Restricted to students participating in Orleans Exchange Program. *Pre: 205 or equivalent and permission of instructor. Not open to freshmen.* Hyland

**301, 302 The Civilization of France** *(I and II, 3 each)* Geographical, historical, economic, social and esthetic factors contributing to the cultural development of France. *(Lec. 3) Pre: for 301, 206; for 302, 301 or permission of department. Recommended for French majors in the General Teacher Education curriculum.* Staff

**305 Composition** *(I, 3)* Writing of literary French. Frequent compositions and critiques with emphasis on the stylistic devices. Recommended for those concentrating in French. *(Lec. 3) Pre: 206 or equivalent.* Porter

**306 Oral Expression in French** *(II, 3)* Discussion, short speech-making, pronunciation, everyday vocabulary, and improvement of conversation. Matters of current interest in French selected by instructor and students. *(Lec. 3) Pre: 206 or equivalent.* Staff

**317 Grammar** *(II, 3)* Grammatical concepts and the linguistic means available for their expression. *(Lec. 3) Pre: 205 or permission of instructor.* Porter

**325 Introduction to Literary Forms** *(I, 3)* The novel, poetry, theater, and the essay. *Explication de texte* and short compositions. *(Lec. 3) Pre: 206, may be taken concurrently by permission of instructor.* Staff (A)

**326 Introduction to Literary Movements** *(II, 3)* Evolution of literary movements from the Middle Ages to the present. *Explication de texte, exposés* and short compositions. *(Lec. 3) Pre: 206, may be taken concurrently, by permission of instructor.* Staff (A)

**391 Literature up to 1789 in Translation** *(I and II, 3)* Major developments in French literature from the Middle Ages through 1789. Reading in translation of selected literary works from representative authors. *(Lec. 3) May not be taken for credit toward concentration requirements in French.* Kuhn (A)

**392 Nineteenth-Century Literature in Translation** *(I or II, 3)* Reading in translation of selected literary works from representative nineteenth-century authors. *(Lec. 3) May not be taken for credit toward concentration requirements in French.* Kuhn (A) (F)

**393 Twentieth-Century Literature in Translation** *(I or II, 3)* Reading in translation of selected literary works from representative twentieth-century authors. *(Lec. 3) May not be taken for credit toward concentration requirements in French.* Kuhn (A) (F)

**394 Literary Topics in Translation** *(I or II, 3)* Selected topics in French literature in translation. *(Lec. 3) May not be taken for credit toward concentration requirements in French.* Staff

**402 French Phonetics** *(II, 3)* Introduction to articulatory phonetics, phonetic notation, and phonetic transcription. Rudiments of recognizing and reproducing French intonation patterns. Laboratory in phonetics and intonation. *(Lec. 3) Pre: 205 or permission of instructor.* Rogers

**411 Medieval Literature** *(I, 3)* Representative works of the late eleventh century through the fourteenth century. *(Lec. 3) Pre: 325 or 326 or permission of instructor.* Rogers

**422 Sixteenth-Century Literature** *(I or II, 3)* The French Renaissance as seen in the writings of Rabelais, Montaigne and contemporary poets. *(Lec. 3) Pre: 325 or 326 or permission of instructor.* Rothschild

**433 Seventeenth-Century Literature** *(II, 3)* General survey of the writers of the period including Corneille, Molière, Racine, Pascal, and the Moralistes. *(Lec. 3) Pre: 325 or 326 or permission of instructor.* Morello

**443 Eighteenth-Century Literature** *(I, 3)* Principal literary movements as illustrated by Voltaire, Diderot, Rousseau, and other leading writers. *(Lec. 3) Pre: 325 or 326 or permission of instructor.* Rothschild

**453 Nineteenth-Century Literature until 1848** *(I, 3)* General survey of poets and prose writers of the period including the major Romantics (Lamartine, Vigny, Hugo, Musset, and novelists such as Stendhal and Balzac). *(Lec. 3) Pre: 325 or 326 or permission of instructor.* Touloudis

**454 Nineteenth-Century Literature since 1848** *(II, 3)* General survey of poets and prose writers of the period including the major Realists (Flaubert, Zola) and Symbolists (Baudelaire, Verlaine, Rimbaud). *(Lec. 3) Pre: 325 or 326 or permission of instructor.* Chartier

**461 Twentieth-Century Theater** *(I, 3)* Representative dramatists. *(Lec. 3) Pre: 325 or 326 or permission of instructor.* Waters

**465 Twentieth-Century Prose** *(I, 3)* Major prose works of this period including those of Proust, Gide, Mauriac, Colette, Sartre, Camus, the new novelists, and others. *(Lec. 3) Pre: 325 or 326 or permission of instructor.* Kuhn

**473 French Canadian Literature** *(I, 3)* Early historical and biographical works, but primarily the novel, poetry, and theater of the twentieth century *(Lec. 3) Pre: 325 or 326 or permission of instructor.* Chartier

**474 Black Literature in French** *(I, 3)* Authors of Africa and the Diaspora; includes Camara, Cécaire, Dadié, Senghor. *(Lec. 3) Pre: 325 or 326 or permission of instructor.* Waters

**497, 498 Directed Study** *(I and II, 3 each)* For the advanced student. Individual research and reports on problems of special interest. *Pre: acceptance of a project by a member of the staff and departmental approval.* Staff

**501 Advanced Composition** *(II, 3)*
**503 History of the French Language** *(II, 3)*
**513 Seminar in Medieval Literature** *(I, 3)*
**523 Seminar in Sixteenth-Century Literature** *(I, 3)*
**533 Seminar in Seventeenth-Century Literature** *(I, 3)*

**544 Seminar in Eighteenth-Century Literature** *(II, 3)*
**554, 555 Seminar in Nineteenth-Century Literature** *(I and II, 3)*
**564 Seminar in Modern Poetry** *(I, 3)*
**565 Seminar in Twentieth-Century Theatre** *(II, 3)*
**566 Seminar in Twentieth-Century Prose** *(I, 3)*
**594 Special Topics** *(I and II, 3)*

## Genetics

*Coordinator:* Assistant Professor Mottinger

**Aquacultural Science and Pathology**
352 General Genetics
354 Genetics Laboratory

**Botany**
352 General Genetics
454 Advanced Genetics Lab
554 Cytogenetics
579 Advanced Genetics Seminar

**Microbiology**
552 Microbial Genetics

**Plant and Soil Science**
472 Plant Improvement

**Zoology**
471 Evolution
476 Human Genetics
576 Ecological Genetics
579 Advanced Genetics Seminar

## Geography and Marine Affairs (GMA)

*Chairperson:* Professor Alexander

*Note: For additional courses, see Earth Science.*

**100 (GEG) The Geography of Human Ecosystems** *(I and II, 3)* The evolution of human environments from the Stone Age to the contemporary megalopolis and the emergent world city in terms of man-earth-space-resource relationships. *(Lec. 3)* West (S)

**101 (GEG) Physical Geography** *(SS, 3)* Introduction to physical basis of geography, including location, climate, land forms, the sea, and earth resources. Staff

**102 (GEG) Geography of Social Issues** *(I and II, 3)* Geographic perspective of socio-economic processes in the city. Emphasis on spatial patterns of social mobility, ethnic diversity, class interaction, and problems of adaptation to the urban-industrial environment. Simulation games. *(Lec. 2, Rec. 1)* Krausse

**103 (GEG) Economic Geography** *(I and II, 3)* Surveys the geographic backgrounds of economic activities. Populations and the resources of agriculture, industry, and commerce in terms of their world and regional distribution. *(Lec. 2, Rec. 1)* Staff

**104 (GEG) The Atmospheric Environment** See Earth Science 104.

**131 (GEG) Political Geography** *(I and II, 3)* Pattern of political units throughout the world, special emphasis on boundaries, newly independent nations, and other aspects of political control over territory. *(Lec. 3)* Alexander (S)

**210 (MAF) Human Use and Control of the Marine Environment** *(I, 3)* Introduction to man's activities occurring in the marine environment and adjacent land areas. Discussion of marine geography and natural marine processes necessary to understand the controls on man's activities. *(Lec. 3)* Juda

**312 (MAF) The Politics of the Ocean** *(II, 3)* Survey of decision-making with respect to the marine environment at the international, national, and local levels. Special emphasis on laws and treaties of the United States and the United Nations. *(Lec. 3) Pre: 210.* Juda

**337 (GEG) Southeast Asia and Oceania** *(II, 3)* Regional analysis of Southeast Asia and the Pacific Islands. Focus on geographic aspects of the Pacific ocean basin, physical characteristics, island ecosystems, discovery and exploitation, economic and cultural diversity. *(Lec. 3) Pre: one 100-level geography course or permission of department. In alternate years, next offered 1982-83.* Krausse

**403 (GEG) Meteorology and Climatology I** *(I, 3)* Introduction to the basic meteorological processes, their spatial and temporal variations. Energy and moisture budgets at the surface of the earth. *(Lec. 3)* Staff

**404 (GEG) Applied Meteorology and Climatology** *(II, 3)* Application of basic principles to solve problems presented by weather and climate-sensitive subject areas such as architecture, agriculture, engineering, hydrology, and other fields of human endeavor. *(Lec. 3) Pre: 403 recommended.* Staff

**405 (GEG) Introduction to Synoptic Meteorology and Climatology** *(I, 3)* Practical approach to the forecasting problem based on the analysis and interpretation of synoptic data and charts and the examination of case studies. *(Lec. 3) Pre: 403 or PHY 406 or permission of the department.* Staff

**406 (GEG) Microclimatology** *(II, 3)* The climate near the ground, stressing material appropriate to the backgrounds of the students. *(Lec. 3) Pre: 403 or equivalent. In alternate years, next offered 1982-83.* Staff

**409 (GEG) Practice in Weather Forecasting** *(I and II, 1)* Weekly preparation of short-term weather prognoses based on National Weather Service procedures. *May be repeated twice. Not for graduate credit. Pre: 405 or permission of instructor. S/U only.* Staff

**410 (MAF) Problems in Geography and Marine Affairs** *(II, 3)* Advanced work in the management of the marine environment, with special emphasis on case studies and student projects. *(Lec. 3) Required for seniors in the marine environmental policy option. Pre: BOT (ZOO) 262 or permission of instructor. Not for graduate program credit.* Cameron

**411 (GEG) Urban Geography** *(I, 3)* Growth and spatial organization of urban places at macro- and micro-regional scales of investigation in cross-cultural contexts. Evolution of internal socio-cultural patterns, the role of urbanization in modernization processes. *(Lec. 3) Pre: one 100-level geography course or permission of department.* Krausse

**421 (GEG) Introductory Cartography** *(I and II, 3)* Principles and methods of map design and construction for geographic analysis. Emphasis on compilation, generalization, scaling, and symbolizing quantitative and qualitative data. *(Lec. 1, Lab. 2)* Krausse

**422 (GEG) Advanced Cartography** *(II, 3)* Advanced map construction, preparation of graphs and diagrams, and a final individual project. Applications of aerial photographs and other forms of imagery. Terrain representation models. *(Lec. 2, Lab. 1) Pre: 421 or permission of department. In alternate years, next offered 1982-83.* Krausse

**432 (GEG) Seminar in Political Geography** *(II, 3)* Special problems of territorial control, including the changing nature of international boundaries, elements of unity and diversity within nations, and concepts of geopolitics. *(Lec. 3) Pre: 131 or permission of department.* Alexander

**446 (GEG) Geography of the Polar Regions** *(II, 3)* Systematic and regional surveys of the physical and biological environments of the Arctic and sub-Arctic. Recent contributions to the geography of the Antarctic. *(Lec. 3) Pre: permission of department. In alternate years, next offered 1981-82.* Staff

**461 (GEG) Coastal Zone Uses** *(II, 3)* Activities in the coastal zones of both developed and developing countries, and the impacts of these activities on the environment. Techniques of accommodating conflicting uses. *(Lec. 3) Pre: 103, BOT or ZOO 262 or permission of department.* West

**471 (GEG) Island Systems** *(II, 3)* Man's impact on the use, alteration, and control of island ecosystems. Emphasis on socio-political and technological developments as they effect changes in the oceanic and coastal island environment. *(Lec. 3) Pre: 210 or permission of instructor. In alternate years.* Krausse

**472 (GEG) Marine Recreation** *(I, 3)* Analysis of supply and demand of marine-related recreational activities in an urban and exurban context. Analysis of qualitative and quantitative characteristics of user behavior, socio-economic and environmental impact. *(Lec. 3) Pre: 103 or permission of instructor.* West

**482 Quantitative Methods in Geography and Marine Affairs** *(II, 3)* Introduction to descriptive and inferential statistics in geography and marine affairs. Emphasis on the spatial application of statistical tests with particular utility to the geographer and marine affairs student. *(Lec. 3) Pre: EST 220 (or preferably EST 408 or its equivalent) and one 100-level geography course; permission of department. In alternate years; next offered 1981-82.* West

**491, 492 (GEG) Special Problems in Geography** *(I and II, 3 each)* Individual guidance in major readings in geography and methods of geographic research. *(Lec. 3) Pre: permission of department.* Staff

**499 (GEG) Directed Study** *(I and II, 1-3)* Individual research and reports on problems of special interest, including honors thesis research. *Pre: acceptance of a project by a member of the staff and departmental approval.* Staff

**502 (GEG) Research Methods in Geography and Marine Affairs** *(I, 3)*

**503 (GEG) Seminar in Climatology** *(I or II, 3)*

**511 (GEG 512) Seminar in Urban Geography** *(I, 3)*

**512 (MAF) (or PSC 512) Seminar in Marine Science Policy and Public Law** *(II, 3)*

**521 (MAF) Coastal Zone Law** *(II, 3)*

**523 (MAF) Fisheries Law and Management** *(II, 3)*

**542 (GEG) Seminar in Economic Geography** *(II, 3)*

**562 (MAF) Admiralty Law** *(I, 3)*

**563 (GEG 452) Transportation Geography** *(II, 3)*

**564 (MAF) Port Geography and Policy** *(II, 3)*

**571 Marine Geography** *(I, 3)*

**572 Geography of Ocean Regions** *(II, 3)*

**577 (MAF 483) (or PSC 577) International Ocean Law** *(I, 3)*

**578 (MAF) International Ocean Organizations** *(II, 3)*

**586 (MAF) Environmental Impact Assessment and Analysis** *(II, 3)*

**591, 592 Directed Study or Research** *(I and II, 1-3)*

**595 (MAF) Problems of Modernization in Developing Nations** *(II, 3)*

## Geology (GEL)

*Chairperson:* Professor J. A. Cain

*Note: For additional courses, see Earth Science.*

**100 (or ESC 100) Environmental Geology** *(I, 3)* Geologic processes and how they affect society; geologic hazards, earthquake impact, shoreline development, offshore oil, waste disposal, water resources, nuclear power plant siting; local issues emphasized. *(Lec. 3)* Cain or Fisher (N)

**101 (or ESC 101) Geological Field Trips** *(I, 1)* Field trips to coastal, glacial, and rock exposure. The relation of structures and materials to the history of the earth, mineral resources, and our environment. *(Lab. 2) In alternate years, next offered 1982-83.* Frohlich

**103 Physical Geology** *(I, 3)* Physical processes on and within the earth; its composition, development and modification of surficial features and their relationships to internal processes; resource and environmental aspects. *(Lec. 3) Not open to students who have passed 105. Pre: concurrent registration in 106.* Cain (N)

**104 Historical Geology** *(II, 3)* Development of continents and ocean basins, method of preservation of fossils, their classification, and introduction to study of fossil plants and animals. *(Lec. 2, Lab. 2) Pre: 103 or 105, 106, or permission of instructor.* Tynan (N)

**105 Geological Earth Science**
See Earth Science 105. (N)

**106 (or ESC 106) Introductory Geology Laboratory** *(I, II, 1)* Introduction to minerals and rocks, their physical properties and mode of origin; geologic and topographic map interpretation. *(Lab. 2) Pre: prior or concurrent registration in 103 or 105.* Staff

**301 Geology of Mineral Resources** *(I, 3)* Origin, distribution, and importance of various mineral resources; energy sources, metals, building and industrial materials, water. Strategic minerals, their world distribution and part played in world affairs. *(Lec. 3) Pre: 103 or ESC 105 and 106 or permission of instructor.* Cain

**302 Engineering Geology** *(II, 3)* Introduction to principles of geology, geologic problems confronting civil engineers. General characteristics of common mineral and rock types, rock deformation, coastal and river processes, earthquakes, groundwater, etc. *(Lec. 3)* Frohlich

**303 Environmental Remote Sensing**
See Earth Science 303.

**320 Hand Sample Mineralogy and Petrology** *(I, 4)* Crystallography and physical properties of minerals related to crystal structure. Composition, classification, genesis, and interpretation of rocks as related to geological occurrence. Emphasis on hand sample identification. *(Lec. 2, Lab. 4) Pre: 103, or 105 and 106, and CHM 101 or 103 (or concurrent registration).* Hermes and Cain

**321 Optical Petrography and Petrogenesis** *(II, 4)* Continuation of 320 emphasizing mineralogy and petrography. Petrogenesis and associations of igneous, sedimentary and metamorphic assemblages. *(Lec. 2, Lab. 4) Pre: 320, PHY 112 or 214, CHM 112 (may be taken concurrently).* Hermes and Cain

**370 Structural Geology** *(II, 4)* Stress and strain relationships as they pertain to rocks. Manifestations of these phenomena in geologic structures and criteria for recognizing them. *(Lec. 3, Lab. 2) Pre: 103 or 104, or ESC 105 and 106, PHY 213 and 285 or 111, or permission of instructor.* Frohlich

**410 Geomorphology** *(I, 4)* Classification of landforms, their development, distribution and associated geologic processes. Cycles of development of coastal, glacial and fluvial landforms. Laboratory: landform analysis of topographic maps, aerial photographs, and field studies. *(Lec. 3, Lab. 2) Pre: ESC 104 and GEL 103 and 104, or ESC 104, 105 and 106, or permission of instructor.* Fisher

**425 Principles of Geochemistry** *(I, 3)* Applications of basic chemical concepts to geological problems: historical geochemistry, crystal chemistry, the phase rule, geochemistry of natural rock systems, isotope geochemistry, distribution of the elements, and geochemical cycles. *(Lec. 3) Pre: 320, CHM 112, 114 (may be taken concurrently) or permission of instructor. Offered in fall of odd calendar years.* Hermes

**440 Introduction to Paleontology** *(I, 4)* History, methods, nature and problems. Systematic survey of animal organisms found as fossils with particular emphasis on their morphology, taxonomy and geologic distribution. *(Lec. 3, Lab. 2) Pre: 104 or ESC 105 and 106, ZOO 111 or BIO 102, or permission of instructor.* Tynan

**450 Introduction to Sedimentation and Stratigraphy** *(I, 4)* Principles underlying formation, composition, sequence, and correlation of sedimentary rocks. Methods, procedures, and techniques to study sedimentary processes, depositional environments, stratigraphic relationships, and stratigraphic correlation. *(Lec. 3, Lab. 2) Pre: 321 or permission of instructor.* Boothroyd

**465 Introduction to Geophysics** *(I, 3)* Introduction to physical properties of the earth and application of geophysical exploration techniques. Seismic, gravity, magnetic and electrical field techniques; basic methods of interpretation. *(Lec. 2, Lab. 2) Pre: 103 or ESC 105 and 106, PHY 112 or 214, MTH 142, or permission of instructor.* Frohlich

**475 Geology of Petroleum** *(II, 3)* Introduction to the geology of petroleum; the origin, migration and accumulation of hydrocarbons.

Reservoir characteristics, traps, surface, and subsurface exploration methods, drilling methods, and products. *(Lec. 2, Rec. 2) Pre: 103 and/or 105. In alternate years.* Tynan

**490 Senior Thesis** *(I and II, 3)* Independent research. Student selects an area of study and works in close conjunction with a faculty member of his or her choice. *(Lab. 6) Pre: senior standing and permission of instructor. Not for graduate degree program credit.* Staff

**510 Coastal Geomorphology** *(II, 3)*
**515 (415) Glacial Geology** *(II, 3)*
**525 Advanced Mineralogy and Petrography** *(I, 3)*
**527 Analytical Geochemistry** *(II, 3)*
**530 Igneous Petrology** *(II, 3)*
**531 Metamorphic Petrology** *(II, 3)*
**541 Animal Micropaleontology** *(I, 3)*
**542 Plant Micropaleontology** *(II, 3)*
**550 Sedimentary Processes** *(I, 3)*
**553 Basin Analysis** *(II, 3)*
**555 Biostratigraphy** *(I, 3)*
**565 Advanced Interpretation in Applied Geophysics** *(II, 3)*
**566 Seismology and Plate Tectonics** *(II, 3)*
**585 Geohydrology** *(II, 3)*
**590 Special Problems** *(I and II, 1-3)*

## German (GER)

*Section Head:* Associate Professor Grandin

**101, 102 Elementary German** *(I and II, 3 each)* Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. *(Lec. 3)* Staff (F)

**103, 104 Intermediate German** *(I and II, 3 each)* Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. *(Lec. 3) Pre: 102 or equivalent.* Staff (F)

**105, 106 Basic Conversation I and II** *(I and II, 1 each) 105:* Practice in conversational skills. *Pre: 103 or concurrent registration in 103. 106:* Continued practice in conversational skills. *(Lec. 1) Pre: 104 or concurrent registration in 104.* Staff

**111, 112 Elementary Conversational German** *(SS, 4)* Intensive study of fundamentals of German with special emphasis on listening and speaking skills. *Not for concentration in German. (Lec. 4)* Staff

**113, 114 Intermediate Conversational German** *(SS, 4)* Intensive practice in listening and speaking. Review of grammatical structure. *(Lec. 4) Pre: 112 or equivalent.* Staff

**121 Conversational German for Business and Travel** *(SS, 4)* Intensive study of the fundamentals of German with special emphasis on the listening and speaking skills pertinent to international business. *Not for concentration in German. (Lec. 4)* Staff

**205, 206 Conversation and Composition** *(I and II, 3 each)* Development of facility in spoken and written German using contemporary writings and topics; special emphasis on general classroom discussion. *(Lec. 3) Pre: 104 or equivalent.* Staff

**215, 216 Advanced Conversational German** *(SS, 4)* Intensive practice in speaking and listening, with some attention to writing skills. *(Lec. 4) Pre: 114 or equivalent.* Staff

**305 Advanced Conversation** *(I, 3)* Intensive practice in spoken German based upon matters of current interest in the German-speaking countries. *(Lec. 3) Pre: 206 or equivalent. In alternate years, next offered 1981-82.* Cosgrove

**306 Advanced Composition** *(II, 3)* Training in various forms of writing by means of frequent compositions and critiques. *(Lec. 3) Pre: 206 or equivalent. In alternate years, next offered 1982-83.* Cosgrove

**315, 316 Language Study Abroad** *(I and II, 3-5 each)* Credit for advanced language study in a German-speaking country. *Pre: 206 or equivalent and permission of department.* Staff

**325 Introduction to Modern German Literature: Genres** *(II, 3)* Traditional and recent forms of narrative, drama, and lyric as illustrated by leading writers from 1885 to the present. *(Lec. 3) Pre: 104 or equivalent. In alternate years, next offered 1981-82.* Benesch (A)

**326 Introduction to Modern German Literature: Movements** *(II, 3)* Literary and cultural developments as reflected by leading writers from 1885 to the present. *(Lec. 3) Pre: 104 or equivalent. In alternate years, next offered 1982-83.* Benesch (A)

**391 Masterpieces of German Literature** *(I, 3)* Literary works from the Middles Ages through 1800 in English translation. *(Lec. 3) May not be used toward a concentration in German. In alternate years, next offered 1982-83.* Staff (A) (F)

**392 Masterpieces of German Literature** *(II, 3)* Literary works from 1800 to the present in English translation. *(Lec. 3) May not be used toward a concentration in German.* Staff (A) (F)

**393 Topics in German Literature** *(I or II, 3)* Selected topics in English translation. *(Lec. 3) May not be used toward a concentration in German.* Staff (F)

**409 History of the German Language** *(I, 3)* Development of the German language from early Germanic to modern German. Emphasis on cultural influences on linguistic change. *(Lec. 3) Pre: 206 or permission of department. In alternate years, next offered 1981-82.* Staff

**431 German Literature from 800 to 1700** *(II, 3)* Literary works from the Old High and Middle High German periods through the age of Baroque. Readings in modern German. *(Lec. 3) Pre: 206 or equivalent. In alternate years, next offered 1981-82.* Staff

**441, 442 German Literature of the Eighteenth Century** *(I and II, 3 each)* Principal literary movements of the century as illustrated by leading writers of the time. *(Lec. 3) Pre: 206 or equivalent. 441 is not a prerequisite for 442. In alternate years, next offered 1982-83.* Grandin

**451, 452 German Literature of the Nineteenth Century** *(I and II, 3 each)* Principal literary movements of the century as illustrated by leading writers of the time. *(Lec. 3) Pre: 206 or equivalent. 451 is not a prerequisite for 452. In alternate years, next offered 1981-82.* Dornberg

**485, 486 Special Studies** *(I and II, 3 each)* Special topics in German literature not emphasized in other courses. *(Lec. 3) Pre: one semester of German at the 300 level or permission of department. In alternate years, next offered 1982-83.* Staff

**497, 498 Directed Study** *(I and II, 3 each)* Designed particularly for the advanced student. Individual research and reports on problems of special interest. *Pre: acceptance of a project by a member of the staff and permission of department.* Staff

## Gerontology

*Director:* Professor Spence

**Consumer Studies**
342 Housing for the Elderly

**Dental Hygiene**
462 Oral Care of the Aging and/or Chronically Ill

**Education**
410, 411 Seminar and Supervised Field Practicum in Education of the Aging

**Food Science and Technology, Nutrition and Dietetics**
307 Nutrition and Aging

**Human Development, Counseling and Family Studies**
220 Gerontology: Theory and Application
221 Work with the Aging
420 Human Development During Adulthood
421 Death, Dying, and Bereavement
422 Aging: Case Coordination
431 Family and the Elderly
520 Developmental Issues in Later Life

**Recreation**
416 Physical Aging and Leisure Skill

**Sociology**
438 Aging in Society

## Greek (GRK)

*Section Head:* Associate Professor Cashdollar

**101, 102 Introductory Greek** *(I and II, 3 each)* Grammar and syntax of ancient Attic Greek combined with reading practice. In the second semester a text of standard Attic prose is read. *(Lec. 3)* Cashdollar (F)

**109, 110 Introduction to Ancient Greek Culture** *(I, II, 3)* Aspects of Greek culture— literature, religion, myth, philosophy, art, private life, archaeology, and etymology — studied through readings in English translation, color slides and lectures. *(Lec. 3)* Cashdollar (F)

**301, 302 Directed Readings in Greek** *(I, II, 3-12)* Study of Ancient Greek writers selected in accordance with the needs and background of the student. May be repeated with different topic for additional credit. *(Lec. 3-12) Pre: 102 or equivalent and permission of the instructor.* Staff (F)

**497, 498 Directed Study** *(I and II, 3)* Individual research and reports on problems of special interest. *Pre: acceptance of a project by a member of the staff and departmental approval.* Staff

## Health (HLT)

*Chairperson:* Associate Professor Polidoro (Physical Education, Health and Recreation)

**123 Foundations of Health** *(I and II, 3)* Development of attitudes and practices that lead to more healthful living. Personal and community health problems are studied. *(Lec. 2, Discussion 1)* Staff (S)

**172 First Aid** *(I or II, 1)* Basic instruction and practice in accident prevention and first aid procedure. Students successfully meeting requirements will receive a Standard First Aid Certificate. *(Lec. 1)* Staff

**272 Advanced First Aid** *(I and II, 2)* Instruction and practice in advanced first aid and emergency care techniques and skills. Fulfills requirements for Red Cross Advanced First Aid Certificate. *(Lec. 1, Lab. 2)* Staff

**356 Methods and Materials in Health Education** *(I and II, 3)* Curricular materials for school and public health education; evaluation of techniques and current methodology for use in elementary and secondary schools. *(Lec. 3)* DelSanto

**357 Principles of Community Health** *(II, 3)* Principles of community health with emphasis on problems of health departments, public and private agencies, and schools in the community health education program. *(Lec. 3) Pre: 123, 367 or permission of department.* DelSanto

**358 Current Problems of Safety and First Aid** *(I, 3)* Major emphasis on content, methods, procedures, and techniques of teaching safety. Reports on the latest developments in teachers' liability and responsibilities for accidents to school children. *(Lec. 3)* Staff

**359 Field Work in Health** *(II, 3)* Directed participation in community health education in cooperation with community health organizations. Weekly seminars. *(Lab. 6) Pre: 357 or permission of department.* DelSanto

**367 (or EDC 367) School Health Program** *(I, 3)* Organization of the school health program in relation to the community health program. Emphasis on health instruction, health services, and healthful school environment. *(Lec. 3)* DelSanto

**372 Instructor's First Aid** *(I or II, 1)* For students and teachers who have completed the advanced course within two years, and desire to certify pupils in Junior, Standard and Advanced First Aid courses. *(Lec. 1)* Staff

**391 Directed Study**
See Physical Education 391.

**484 Supervised Field Work**
See Physical Education 484.

**486 Field Experience Seminar**
See Physical Education 486.

**560 (or PED 560) Seminar in Health, Physical Education and Recreation** *(I or II, 3)*
**570 (or PED 570) Major Health Problems and Curriculum Planning in Health Education** *(I or II, 3)*
**591 (or PED 591) Special Problems** *(I or II, 3)*
**595 (or PED 595) Independent Study** *(I or II, 3)*

## Hebrew (HBW)

**101, 102 Beginning Hebrew** *(I or II, 3)* Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. *(Lec. 3) Pre: 101 for 102.* Jagolinzer (F)

## History (HIS)

*Chairperson:* Professor Gutchen

**103 Special Topics in Western Civilization** *(I and II, 1-3)* Topical approach to, rather than a survey of, Western civilization. Topics vary from semester to semester. *(Lec. 3)* Staff (L)

**105 Freshman Seminar in History** *(I or II, 3)* Re-creating the past by the use of original historical source materials in topics and areas to be selected. *Limited to 15 freshmen. Pre: permission of department.* Staff (L)

**111 History of Ancient Greece and Rome** *(I, 3)* From the Greek and Latin settlements to the Germanic invasions with emphasis on political, social, economic, and aesthetic developments. Includes rise of the Christian church. *(Lec. 3)* Daniel (F) (L)

**112 History of Medieval Europe** *(II, 3)* Primarily western Europe. Follows 111. Medieval church, feudalism, revival of town life, commerce, industry and money economy, rise of national states and development in the arts. *(Lec. 3)* Daniel (F) (L)

**113 History of Western Civilization from the Late Middle Ages to 1789** *(I and II, 3)* Introductory course treating Western Civilization in its broadest sense from the late Middle Ages to the French Revolution and the beginnings of industrialization. *(Lec. 3)* Staff (F) (L)

**114 History of Western Civilization since 1789** *(I and II, 3)* Continuation of 113. Western Civilization of the present time. *(Lec. 3)* Staff (F) (L)

**115 The History of Science to 1800** *(I, 3)* A survey of the developments of science from Ancient Greece through the Scientific Revolution of the seventeenth and eighteenth centuries. *(Lec. 3)* Briggs

**116 The History of Science Since 1800** *(II, 3)* A survey of the development of science in society over the last two centuries. *(Lec. 3)* Briggs

**118 Women in European History** *(II, 3)* Attitudes toward women, their role in society, women's work, and the feminist movement. Emphasis on nineteenth and twentieth centuries with background material from earlier periods. *(Lec. 3)* Schach-Cook (L)

**122 History of England since 1500** *(I or II, 3)* Emphasis on constitutional conflicts and developments, commerce, agricultural and industrial revolutions, artistic, intellectual, and social developments. *(Lec. 3)* Gutchen (L)

**132 Introduction to Russian and Soviet History** *(I or II, 3)* Selected topics in the development of Russian civilization since the ninth century. *(Lec. 3)* Thurston (F) (L)

**141 History of the United States to 1877** *(I or II, 3)* Colonial and Revolutionary periods, and economic, social, and political development of the United States through the Civil War and Reconstruction. *(Lec. 3)* Staff (L)

**142 History of the United States since 1877** *(I or II, 3)* General social, economic and political development to the present. *(Lec. 3)* Staff (L)

**143 Special Topics in the History of America** *(I and II, 1-3)* Topical approach to, rather than a survey of, American history. Topics vary from semester to semester. *(Lec. 3)* Staff (L)

**145 Women in American History** *(I or II, 3)* American women from the colonial period to the present. Emphasis on institutionalization of the Victorian ideal, women in the labor force, and origins of liberation ideology. *(Lec. 3)* Strom (L)

**150 Introduction to Afro-American History** *(I or II, 3)* Survey of Negro American history from African origins to the current racial confrontation. *(Lec. 3)* Weisbord (L)

**171 East Asian Culture and History** *(I or II, 3)* Introduction to the culture and history of East Asia. Emphasis on the literary, artistic, and philosophical traditions of East Asia especially as those aspects relate to and influence contemporary developments. *(Lec. 3)* Kim (F)

**174 Islamic Civilization in Asia, 570 to the Present** *(I, 3)* Cultural history of the Muslim people of Asia with emphasis on the religion, social organization, architecture, painting, and music of the Arab, Turkic and Persian peoples. *(Lec. 3)* Roughton (F)

**175 Islamic Civilization in Africa and Spain, 570 to the Present** *(II, 3)* Cultural history of the Muslim peoples of Africa and Spain with emphasis on religion, social organization, architecture, painting, and music. *(Lec. 3)* Roughton (F)

**180 Introduction to Latin American Civilization** *(I or II, 3)* Social, cultural and political history of the Latin American region from the pre-conquest era to the present time. *(Lec. 3)* Bryan (F) (L)

**304 (405) Western Europe in the High Middle Ages** *(I, 3)* Primarily France and England in the twelfth and thirteenth centuries. Emphasis on the Medieval Gothic-Catholic culture, the rise of towns, and the development of a money economy. *(Lec. 3)* Daniel (F)

**305 (406) The Renaissance** *(II, 3)* Europe in transition during the fourteenth through the early sixteenth centuries, the economic, social, and religious backgrounds of the Renaissance. Emphasis on culture and artistic developments. *(Lec. 3)* Daniel

**306 (469) The Protestant and Catholic Reformation I** *(I, 3)* Change of European society resulting from Protestant Reformation and Catholic Reaction; rise of secular states and emerging national states; effects of religious crises upon culture and society. *(Lec. 3)* Daniel (F)

**307 (470) Protestant and Catholic Reformation II** *(II, 3)* Catholic and Counter Reformation, Northern Renaissance, wars of religion, social and cultural manifestations of the early Baroque. *(Lec. 3)* Daniel (F)

**308 (408) History of Europe, 1648-1789** *(I, 3)* Survey of the European states from the Peace of Westphalia to the French Revolution. Emphasis on relationship among social and economic conditions and political development. *(Lec. 3)* Silvestri

**309 (409) The French Revolution and Napoleon** *(I, 3)* Examination of the Revolution and Napoleonic eras with emphasis on the connections among economic, social, and political developments. Special attention to problems in interpretation. *(Lec. 3)* Silvestri

**310 (410) History of Europe, 1815-1914** *(I, 3)* Major political, economic, and intellectual developments in Europe from the defeat of Napoleon I to the outbreak of World War I, emphasis on the Revolutions of 1848, unification of Italy and Germany, impact of the Industrial Revolution, nationalism and imperialism, background of World War I. *(Lec. 3)* Schach-Cook (F)

**311 (411) History of Europe since 1914** *(II, 3)* Detailed study of developments from 1914 to present: wars, post-war adjustments, communist and fascist ideologies, history of individual states, and social and intellectual trends. *(Lec. 3)* Silvestri, Honhart, Schach-Cook (F)

**314 Seventeenth- and Eighteenth-Century European Cultural History** *(I, 3)* Intellectual and social movements of the Age of Reason and the Age of Enlightenment. *(Lec. 3)* Briggs (F)

**315 Nineteenth- and Twentieth-Century European Cultural History** *(II, 3)* Intellectual and cultural movements from Romanticism through Existentialism. *(Lec. 3)* Honhart and Thurston (F) (L)

**318 Diplomatic History of Europe since 1815** *(I, 3)* Materials used in writing diplomatic history, review of the major crises with their causes and consequences, and movements for collective security. *(Lec. 3)* Schach-Cook

**321 History of England: 1485-1660** *(I, 3)* Political, economic, and religious change from the beginning of the Tudor dynasty to the Puritan Revolution and the Commonwealth. *(Lec. 3)* Gutchen (L)

**322 History of England: 1660-1815** *(II, 3)* Political, economic, religious, and cultural change from the Stuart restoration to the emergence of Britain as a world power at the end of the Napoleonic wars. *(Lec. 3)* Gutchen (L)

**323 History of England: 1815-1896** *(I, 3)* Impact of industrialization and urbanization on political, economic, religious, and cultural forces in the Victorian age. *(Lec. 3)* Gutchen (L)

**324 History of England since 1896** *(II, 3)* History of Britain since 1896, with emphasis upon its changing role as a world power, the impact of economic change on politics and society, and the development of the social welfare state. *(Lec. 3)* Gutchen (L)

**325 History of European Socialism** *(I, 3)* Historical development of socialism in Europe since beginning of the Industrial Revolution, emphasis on socialist movements and ideologies in Germany, France, Russia, and England. *(Lec. 3)* Honhart (L)

**326 (426) German History, 1640-1914** *(I, 3)* The evolution of modern German society from mid-17th century to the First World War. Topics include: absolutism, enlightenment, nationalism, industrialization, demographic trends, and changing patterns in social structure and social conflict. *(Lec. 3)* Honhart (F)

**327 German History since 1914** *(II, 3)* The collapse of Germany's social and political order between 1914 and 1945 and the subsequent creation of antagonistic liberal and socialist societies in West and East Germany. Emphasis on national socialism. *(Lec. 3)* Honhart (F) (L)

**330 History of France since 1815** *(II, 3)* French political and social history from the end of the First Empire to the Fifth Republic. Complexities of class divisions and their repercussions on French political history. *(Lec. 3)* Silvestri (F)

**332 (432) History of Russia to 1917** *(I, 3)* Russian origins in medieval Kiev and rise of autocracy in Muscovy. Imperial Russia's development in eighteenth and nineteenth centuries. Emphasis on social and cultural change. *(Lec. 3)* Thurston (F)

**333 History of the Soviet Union** *(II, 3)* Russian history from the revolutions of 1917 to the present. Emphasis on the reconstruction of Russian institutional life by the Bolsheviks, and political, economic, intellectual, and ideological developments. *(Lec. 3)* Thurston (F) (L)

**335 American Colonial History to 1763** *(I, 3)* American history from the founding of the colonies to the end of the French and Indian War, including developments within the colonies as well as their relationship with England. *(Lec. 3) Pre: 141 or equivalent.* Metz

**336 The American Revolution and Confederation, 1763-1789** *(I, 3)* Social, political, and economic aspects of the Revolution and Confederation periods. *(Lec. 3) Pre: 141 or permission of instructor.* Cohen

**337 The United States during the Early National Period, 1789-1850** *(II, 3)* American history from the Constitution through the Federalist, Jeffersonian, and Whig periods with emphasis upon political developments and social economic aspects of the era. *(Lec. 3) Pre: 141 or permission of instructor.* Cohen

**339 Emergence of Industrial America, 1877-1917** *(I, 3)* Growth and consolidation of business, urbanization, and the Populist and Progressive movements. America's emergence as a world power. *(Lec. 3) Pre: 142 or permission of instructor.* Klein and Findlay

**340 United States History from 1917 to 1945** *(I or II, 3)* Social, political, and economic developments between the World Wars. Emphasis on domestic affairs, special at-

tention to the involvement of the United States in World War II. *(Lec. 3)* Klein and Findlay

**341 United States History since 1945** *(I or II, 3)* Social, political, and economic developments since the end of World War II. Equal emphasis upon the domestic sphere and the role of the United States in the world. *(Lec. 3)* Klein and Findlay (L)

**342 Social and Intellectual History of the United States to 1865** *(I, 3)* Survey of social and intellectual development to the end of the Civil War, including literary, artistic, and scientific trends, reform movements and growth of the democratic ideal. *(Lec. 3)* Metz (L)

**343 Social and Intellectual History of the United States, 1865 to the Present** *(II, 3)* Social and intellectual development after the Civil War, including literary, artistic, scientific trends. Particular attention to interaction between concepts and institutions during periods of social reform. *(Lec. 3) Pre: 142 or permission of instructor.* Klein

**344 History of the North American Indian** *(I or II, 3)* Native North Americans from pre-Columbian times to present. Emphasis on ideological conflict between Indians and whites. *(Lec. 3)* Costigliola (F)

**346 Immigration to Ethnicity in Modern America** *(I, 3)* Nature of population movements to U.S. in 19th and 20th centuries, formation of ethnic communities and their internal dynamics, role of ethnic groups in American social, cultural, and political history. *(Lec. 3)* Findlay

**347 American Women in the Twentieth Century** *(I, 3)* Emphasis on the nature of women's work, changes in sexual behavior, feminist movement, and images of women in popular culture. *(Lec. 3) Pre: 145 or permission of instructor.* Strom

**350 Constitutional History of the United States** *(II, 3)* The origins, framing and development of the Constitution of the United States with particular attention to the social and economic influences that have shaped our form of government and our attitudes toward it. *(Lec. 3) Pre: 141 and 142.* Metz

**353 United States Diplomatic History to 1914** *(I or II, 3)* Analysis of the people, ideas, and institutions which shaped the rise of the U.S. from thirteen colonies to the most powerful nation in the world. *(Lec. 3)* Costigliola (L)

**354 United States Diplomacy in the Twentieth Century** *(I or II, 3)* Analysis of people, ideas, and institutions which have shaped American relations with the rest of the world from World War I to the present. *(Lec. 3)* Costigliola (L)

**355 The Transnational Corporation** *(I or II, 3)* History of the transnational or multinational corporation from its rise in the late nineteenth century to its preeminence today. The course considers economic, political and social factors. Costigliola

**357 History of Religion in the United States** *(I, 3)* Background, emergence of evangelical protestant synthesis, disintegration of this synthesis and development of pluralistic religious community in modern America. *(Lec. 3)* Findlay

**358 Recent America in Film** *(II, 3)* An investigation of American culture and history since 1930 using films as the major resource for study, with emphasis on the Great Depression, WWII, sexual interaction, and race relations. *(Lec. 1, Lab. 4)* Strom

**362 History of Rhode Island** *(II, 3)* History of Rhode Island from the first English settlement to the present day. Social, political, and economic aspects of internal development and the relation of the state to the region and the nation. *(Lec. 3) Pre: 141 and 142.* Metz

**363 American Urban History** *(I, 3)* Origins, development and role of cities in America from colonial times to the present. Emphasis on tensions between social change and social control generated by urban growth. *(Lec. 3)* Klein

**365 Civil War and Reconstruction** *(I or II, 3)* American history during the period 1850-1877, giving equal emphasis to the background of the Civil War, the war itself, and the social, political, and economic aspects of Reconstruction. *(Lec. 3)* Klein, Strom

**372 Science in the Modern World** *(I or II, 3)* A study of the development of specific scientific innovations and their effects on the scientific community, scientific disciplines, technology, and society in general since the Renaissance. *(Lec. 3)* Briggs

**373 (or ZOO 373) History of Biology** *(I or II, 3)* Development of basic ideas and paradigms of biology from the Greek world to the present. Emphasis on the period of the last three centuries. *(Lec. 3)* Briggs

**374 (473) History of Modern China** *(II, 3)* Political, social, economic, and cultural development of China since 1800 with the emphasis on the development of Chinese nationalism and on the rise, theory, and practice of Chinese communism. *(Lec. 3)* Kim (F)

**375 (474) History of Modern Japan** *(I, 3)* Background and significance of the Meiji restoration (1868) and modernization; the development of Japanese militarism, the fall of the Japanese Empire and the emergence of the "New Japan." *(Lec. 3)* Kim (F)

**376 (475) History of Modern Korea** *(II, 3)* Eighteenth century Yi government and society; colonial totalitarianism under Japanese rule; the fall of the Japanese Empire, division, and chaos; the Korean conflict and aftermath. *(Lec. 3)* Kim (F)

**377 Southwest Asia and North Africa since 1683** *(II, 3)* Southwest Asia and North Africa from the second siege of Vienna. Transformation of Ottoman and Iranian societies under the influence of Western ideas and institutions. Development of Arab, Turkish, and Iranian nationalisms. *(Lec. 3)* Roughton

**379 Imperialism and its Impact upon Colonized Peoples** *(I, 3)* Historical analysis of colonialism and imperialism, the struggle for independence, and the problems confronting newly independent states, with emphasis on the Third World. *(Lec. 3)* Roughton

**381 History of Colonial Latin America** *(I, 3)* The interaction of American-Indian civilizations with European and African elements in the Spanish and Portuguese empires of the New World, concluding with the wars for independence. *(Lec. 3)* Bryan (F) (L)

**382 History of Modern Latin America** *(II, 3)* Historical analysis of the political, cultural, and social-economic dimensions of tradition, reform, and revolution in Latin America since 1810. *(Lec. 3)* Bryan (F) (L)

**383 History of Modern Mexico** *(I or II, 3)* Social, economic, and political development of Mexico from 1810 to the present, emphasizing the Revolution of 1910, its background and aftermath. *(Lec. 3)* Bryan (F) (L)

**384 The Caribbean: New World/Third World** *(I or II, 3)* Historical and contemporary development of the Caribbean world, emphasizing efforts by the regions' peoples to achieve political, economic, and cultural independence from external domination. *(Lec. 3)* Bryan (F) (L)

**388 History of Sub-Saharan Africa** *(I, 3)* Ancient and medieval Africa, and the impact of Islam; the "Glorious Age" of the Sudanic empires; the slave trade and the age of exploration; the period of European partition and the rise of African nationalism. *(Lec. 3) Pre: junior standing.* Weisbord (F)

**391 Directed Study or Research** *(I and II, 3)* Special work arranged to meet the needs of individual students who desire advanced work. *(Lec. or Lab.) Pre: permission of department.* Staff

**393 Topics in History** *(I and II, 1-3)* Subject, course content, and years offered will vary according to expertise and availability of instructors. With departmental permission can be taken more than once. Staff

**395 Seminar in History** *(I or II, 3)* Introduction to historical research and writing. Topics vary. Required for history concentration. *Pre: permission of department.* Staff

**398 History through Science Fiction** *(II, 3)* Ideas about history in popular culture as seen in the literary genre of science fiction. *(Lec. 3)* Briggs, Klein

**451 Historical Society and Museum Administration** *(II, 3)* Survey of historical societies, museums, and preservation agencies; the collection, care and interpretation of historical artifacts and documents; problems facing historical agencies. Student work programs and museum visits. *(Lec. 3)* Klyberg

**455 American Maritime History** *(SS, 3)* A survey of the maritime development of the United States from the founding of the colonies to the present. Emphasis on the growth of American merchant shipping and naval power and their relationships to American political, economic, military and cultural history. *(Lec. 3) Pre: 141 and 142 or equivalent.* Crandall

**491 Conference on the Social Studies** *(SS, 3)* Intensive study of selected aspects of the social sciences and problems or issues in social studies, viewed in historical perspective. Topic varies. Staff

**501 Colloquium in European History** *(I or II, 3)*
**502, 503 Special Readings in European History** *(I and II, 3)*
**521, 522 Readings and Research in European History** *(I and II, 3 each)*
**535 Colloquium in American History** *(I or II, 3)*
**536, 537 Special Readings in American History** *(I and II, 3 each)*
**540 Seminar in American Colonial History: the Seventeenth and Eighteenth Centuries** *(I or II, 3)*
**541 Seminar in Nineteenth-Century American History** *(I and II, 3)*
**542 Seminar in Twentieth-Century United States History** *(I and II, 3)*
**543 Seminar in the History of the United States Foreign Relations** *(II, 3)*
**550 Seminar in Black Nationalism and the International Race Problem** *(I or II, 3)*
**560 Research in Local History** *(II, 3)*
**580 Colloquium in Latin-American History** *(I or II, 3)*
**588, 589 Special Readings in Third World History** *(I and II, 3 each)*
**591 Directed Study or Research** *(I and II, 3)*

## Home Economics (HEC)

**400 Home Economics Seminar** *(II, 1)* Didactic and experimental learning in the areas of home economics. Historic perspective, current issues, and futuristic trends in home economics. *(Lec. 1) Pre: HSS 320 and field experience. Intended for general home economics majors. Not for graduate credit.* Staff

## Home Economics Education (HED)

**334 Teaching-Learning Strategies** *(I, 3)* Instructional strategies for home economics areas. Selection of resource materials and techniques based on objectives, needs, and characteristics of learners and sound educational principles. (On-site observations and teaching experiences.) *Pre: EDC 101 and 12 credits in home economics, or permission of instructor.* May

**337 Teaching Effectiveness** *( II, 4)* Development of curriculum materials specific to individualized instruction; focus on communication skills in an educational setting; implementation of advanced methods and techniques in a microteaching and school setting. *(Lec. 2, Lab. 4) Pre: 334.* P. Kelly and May

**340 Community Programming** *(I or II, 3)* Interpretation of census data to develop home economics programs based on state and community needs. Educational techniques used to reach the identified populations. *(Lec. 3) Pre: SPE 101, or WRT 101 and junior standing or permission of instructor.* Staff

**478, 479 Problems in Home Economics Education** *(I and II, 1-3 each)* Advanced work in home economics education. Seminars or supervised individual projects. *(Lec. or Lab.) Pre: permission of department.* Staff

**482 Field Experience** *(I and II, 1-3)* Supervised teaching experience in home economics in either a school or non-school setting. (Not synonymous with experience gained in 483 or EDC 484.) *Not for graduate degree credit. Pre: 337 (or concurrent registration), 12 credits in a selected area or permission of department. S/U credit.* Staff

**483 Teaching Alternatives** *(I, 8)* Directed field experience in home-economics-related areas for students who do not wish teacher certification. *Not available to teacher certification undergraduate students or for graduate degree program credit. (Field experience 240 hours) Pre: 337 (or concurrent registration), 12 credits in a selected area. Permission of department. S/U credit.* Staff

**490 Teaching Home Economics: Grades 1 through 6** *(I and II, 2)* Development of home economics curriculum for the elementary school with emphasis on integration of home economics objectives with existing school curriculum. Guided field experience. May be taken concurrently with EDC 484, 485. *(Lec. 4) Pre: 334, HCF 200, EDC 312 or permission of department.* P. Kelly

**491 Teaching Home Economics: Adults** *(II, 3)* Planning and preparing curriculum materials for adult education classes in home economics, based on adult needs and interests. Participation in actual teaching. *One-half semester course which may be taken concurrently with EDC 484. Pre: 334 or permission of department.* P. Kelly and May

**495 Teaching Occupational Home Economics** *(I or II, 3)* Concepts and components of career and vocational education with implications for change in home economics education. Exploration of work experience possibilities and review of educational materials. May

**506 Instructional Communications** *(I or II, 3)*
**507 Curriculum Development** *(I or II, 3)*
**508 Supervision of Student Teachers** *(I or II, 3)*
**509 Seminar in Home Economics Education** *(I or II, 3)*
**531 (or FSN 531) Teaching of Nutrition** *(I or II, 3)*
**532 (or CNS 532) Consumer Education** *(II, 3)*
**586, 587 Problems in Home Economics Education** *(I and II, 3 each)*

## Honors Program (HPR)

*Colloquium Coordinator for 1981-1982:* Professor Doody

**101, 102 Freshman Honors Courses** *(I and II, 1-4)*
**201, 202 Honors Colloquium** *(I and II, 3 each)*
**301, 302 Honors Tutorial** *(I and II, 3 each)*
**401, 402 Honors Project** *(I and II, 3 each)*
**411, 412 Honors Seminar** *(I and II, 3 each)*

## Human Development, Counseling, and Family Studies (HCF)

*Chairperson:* Professor Zweig

**150 Personal Development** *(I and II, 3)* Emphasis on self-understanding and human relationships in general. Influence of societal roles, groups interaction, and contemporary cultural issues on individual development. *(Lec. 3)* Staff

**200 Life-Span Development I** *(I and II, 3)* For students who intend to enter a profession dealing with children. Physical, social, mental, emotional growth and development, and interrelations among them from birth to puberty. *(Lec. 3)* Staff

**201 Life-Span Development II** *(I and II, 3)* For students entering the human services. Introduction to social, mental, emotional growth and development, and interrelations among them. Emphasis on adolescence through senescence. *(Lec. 3)* Staff

**202 Fundamentals of Preschool Education** *(I and II, 2)* Philosophy and theory basic to teaching and guiding the young child. Restricted to professional and semiprofessional persons with experience in the field *(Lec. 2) Pre: permission of instructor.* Staff

**203 Introduction to Work with Children** *(I and II, 3)* Theory and practice in care, teaching, and guidance of preschool children. Lectures, discussion, and participation in nursery school. *Students should have two free hours between 9 and 11:30, and 1 and 3:30 one day per week. (Lec. 2, Lab. 2) Pre: 200.* Nursery School Staff

**220 Gerontology: Theory and Application** *(I, 3)* Introduction to the study of aging processes: biological, psychological, and social theories. Health, social and other age-related problems will be examined in the classroom and in interaction with older people. *(Lec. 2, Rec. 1)* Staff (S)

**221 Work with the Aging** *(II, 3)* Includes theoretical, ethical, and practical aspects of work with the aging. Each student will have ongoing field experience in a setting with older people. Own transportation desirable. *(Lec. 2, Lab. 2) Pre: HCF 220.* Staff

**301 Curriculum for Young Children** *(I and II, 3)* Program planning for nursery school and kindergarten. Theory and teaching techniques that foster full development of the young child through language, arts, creative activities, science, and mathematics. *(Lec. 3) Pre: 201.* Staff

**302 Literature for Children** *(I and II, 3)* Literary heritage of American children and criteria for the selection and presentation of literature to children. *(Lec. 3) Pre: junior standing.* Staff

**303 Nursery School Practicum** *(I and II, 4)* Supervised participation in the nursery school. Discussion and conferences. *(Lec. 2, Lab. 4) Pre: prior or concurrent registration in 301.* Nursery School Staff

**304 Contemporary Philosophies of Guiding Children** *(I and II, 3)* Factors involved in developing a philosophy of guidance of children and adolescents. The evolution of present-day theory. Contemporary writers read and discussed. *(Lec. 3) Pre: 201 or permission of department.* Staff

**305 Child Care: Changing Patterns** *(I, 3)* Comprehensive study of child care, historical background and development, administration of centers, sociological problems, legislation, new trends in programs. Guest lecturers, related field observations. *(Lec. 3) Pre: 201 or permission of department.* Lapin

**310 Adolescent Growth and Development** *(I and II, 3)* Physical, psychological, social, and emotional growth and development of individual during adolescent years. *(Lec. 3) Pre: 200 or PSY 232.* Staff

**330 Marriage and Family Relationships** *(I and II, 3)* Male-female relationships in courtship and the family system as influenced by personality and culture in a changing society. Professional and functional orientation. *(Lec. 3) Pre: junior standing.* Staff

**350 Human Relations Laboratory** *(I and II, 1)* Understanding individual behavior in the context of a social group; discussion and selected group dynamics techniques. *(Lab. 2) Pre: 150, 200 and permission of instructor. S/U credit.* Fitzelle

**357 Family and Community Health** *(I and II, 3)* Health maintenance throughout life. Specific health concerns of various age groups. Community and world health needs and agencies concerned with meeting these needs. Home nursing demonstration and practice. *(Lec. 3) Pre: junior standing.* Votta

**380 Field Experiences in Community Agencies** *(I and II, 8)* Supervised experience in community agencies for individuals or groups with special needs. Apply for permission by end of fourth semester. *Pre: 12 credits in HCF, permission of department and senior standing.* Staff

**400 Child Development: Advanced Course** *(I and II, 3)* Presentation of theory of human development and consideration of some of the classical and current investigations in the field. *(Lec. 3) Pre: 200 or equivalent.* Staff

**406 Growth and Development During Infancy** *(I, 3)* Study of developmental sequences from birth to two years with emphasis on biological, psychological, social, and environmental influences affecting growth. Laboratory periods consist of observation and experience with infants in various settings. *Pre: 200 and permission of the instructor. (Lec. 2, Lab. 1)* Staff

**420 Human Development During Adulthood** *(I or II, 3)* Major social, and cultural factors influencing development after physiological maturity and prior to senescence. Major theorists and normal crises of adulthood. *(Lec. 3) Pre: 200 or 310 or equivalent.* Staff

**421 Death, Dying, and Bereavement** *(II, 3)* Exploration of human death, dying, and bereavement. Focus on biomedical, psychological, and sociocultural dimensions of the topic. *(Lec. 3)* Knott

**422 Aging: Case Coordination** *(I, 3)* Explores concepts, principles, methods, and models of case coordination for older people; client characteristics and needs; environmental resources; assessment, coordination, evaluation, and advocacy. *(Lec. 3) Pre: 220 and one other aging-related course or permission of instructor.* N. C. Kowalski

**430 Family Interaction** *(I and II, 3)* Interdisciplinary approach to the dynamics of intrafamily relationships, interactions of family units and family members with elements of the socio-cultural environment. *(Lec. 3) Pre: 330 or SOC 202.* Staff

**431 Family and the Elderly** *(II, 3)* Emphasis on the elderly in analysis of intergenerational organization and relationships. Cultural values, psychosocial factors, economic considerations, and societal trends relative to family life. *(Lec. 3)* Cooper and Spence

**432 Perspectives on Parenting** *(II, 3)* Comprehensive study of the central issues, research and recent developments in the field of parenting; the impact of the behavioral sciences and social change on parents. *(Lec. 3) Pre: 200 or permission of instructor.* Greene

**433 Family Life Education** *(II, 3)* Interdisciplinary consideration of relationships between the sexes during childhood and adolescence, including: family health, normal psychosexual development, marriage, ethics, sex education, teaching of family relations. *(Lec. 3) Pre: 330 or permission of department.* Staff

**434 Children and Families in Poverty** *(II, 3)* Interdisciplinary approach to understanding culturally and economically deprived people. Some experience working with such individuals or groups. *(Lec. 2, Lab. 1) Pre: permission of department.* Staff

**435 Developmental Assessment in Early Childhood** *(SS, 6)* Fundamentals and procedures for competency-based assessment in psychomotor, language, cognitive, social and pre-academic skills with curriculum implications. Lectures and laboratory experiences provide theory and practice within a developmental framework. *(Lec. 4, Lab. 4) Pre: student teaching or equivalent experience and permission of instructor.* Rae

**450 Introduction to Counseling** *(I and II, 3)* Introduces students in human sciences in both professional and paraprofessional settings to interviewing and counseling skills. Integrates theory, practice, and application by didactic and experimental learning. *(Lec. 3) Pre: graduate standing or permission of department.* Staff

**497, 498 Special Problems** *(I and II, 2-4 each)* Open to qualified seniors or graduate students who wish to do advanced work. *(Lec. or Lab. according to nature of problem) Pre: senior standing and permission of department.* Staff

**500 Child Development Seminar** *(I or II, 3)*
**501 Seminar in Early Childhood Education** *(I and II, 3)*
**502 Cognitive Aspects of Early Childhood Education** *(I and II, 3)*
**505 Theories and Issues in Human Sexuality** *(I, 3)*
**520 Developmental Issues in Later Life** *(I, 3)*
**530 Family Relations Seminar** *(II, 3)*
**535 Families Under Stress: Coping and Adaptation** *(I or II, 3)*
**550 Vocational Information and Career Development** *(I and II, 3)*
**551 Counseling Techniques** *(I and II, 3)*
**553 Group Procedures in Counseling** *(I and II, 3)*
**554 Individual Appraisal in Guidance** *(II, 3)*

**559 Counseling of Women** *(I or II, 3)*
**560 Group Procedures in Counseling** *(I and II, 3)*
**561 Practicum in Group Counseling** *(I, 3)*
**562 Organization Development in Education** *(II, 3)*
**567 Principles and Practices of Student Personnel Services in Higher Education** *(I, 3)*
**568 Organization and Administration of Student Personnel Services in Higher Education** *(II,3)*
**570 The Study of Children and Families** *(I, 3)*
**580, 581 Professional Seminar in Counseling** *(I and II, 3 each)*
**582 Field Experience with Exceptional Children** *(I and II, 3)*
**583, 584 Master's Counseling Internship** *(I and II, 3 or 6 each)*
**597, 598 Advanced Study** *(I and II, 3 each)*

## Human Science and Services (HSS)

*Dean:* Professor MacMillan

**222 Introduction to Human Science and Services** *(I and II, 3)* Survey of contemporary human service needs and delivery systems with emphasis on historical development, values, ethics, agency structures and functions, and consumers. *(Lec. 3) Pre: any one of the following: ECN 123, PSC 113, SOC 208, PSY 113, HCF 200 or 201.*

**320 Introduction to Research in the Human Sciences and Services** *(II, 3)* Consideration of the philosophy, principles, methods, and materials involved in research in the human sciences. Emphasis also on research reading, writing, and presentation skills. *(Lec. 3) Pre: permission of instructor.* Staff

**350 Foundations of Public Policy in Human Services** *(I and II, 3)* The analysis of recent public policy proposals in various areas of human services through differing ideological assumptions of traditional and contemporary views of helping professionals. *(Lec. 3)* Calabro, Willis and Russo (S)

**491, 492 Special Problems** *(I or II, 1-3)* Independent study. Advanced work in the human services under the supervision of a faculty member. *Not for graduate credit. Pre: permission of instructor and the Division of Interdisciplinary Studies.* Staff

## Industrial Engineering (IDE)

*Chairperson:* Professor C. F. James, Jr.

**220, 221 Industrial Engineering I, II** *(I and II, 4 each)* Introduction to industrial engineering. Elementary topics in production control, forecasting, motion and time-study, methods analysis, operations research and quantitative techniques, engineering economics, compensation systems, and manufacturing processes. *(Lec. 3, Lab. 3) Pre: MTH 142 for 220; credit or registration in CSC 201 for 220 and 221.* Staff

**331 Industrial Manufacturing Processes I** *(I, 3)* Introduction to the fundamentals of chip forming processes in manufacturing and their relation to materials deformation produced by the interaction of the cutting tools with the materials. Emphasis on what the processes will do, how they do it, their accuracy, relative advantages and limitations, and relation to surface integrity of machine surface. *(Lec. 3) Pre: CCRI 800-293.* Staff

**332 Industrial Manufacturing Processes II** *(II, 3)* Application and practical fundamentals of forming, casting, joining processes in manufacturing and their relation to deformation, structure or state of material. Includes study of non-traditional processes, such as electrodischarge machining, etc. *(Lec. 3) Pre: 331.* Staff

**350, 351 Industrial Engineering Systems Design I, II** *(I and II, 3 each)* Design and analysis of systems of production facilities and materials handling. Compensation, production, and inventory control systems. Applications of and case problems in operations research, probability and statistics, engineering economy, and other foundation areas. Introduction to simulation. Design and analysis of industrial engineering systems. *(Lec. 3) Pre: for 350: 221, 412, 432; for 351: 350, 433.* Staff

**391, 392 Special Problems in Industrial Engineering** *(I and II, 1-3 each)* Independent study and seminar work under close faculty supervision. Discussion of advanced topics in preparation for graduate work. *Pre: junior standing and permission of department.* Staff

**404 Engineering Economy** *(I, 3)* Effects of economics on engineering decisions in design, selection, and replacement of equipment and evaluation of project proposals. Theory of depreciation and obsolescence. *(Lec. 3) Pre: ECN 123, MTH 142. Not open to students with credit in 220.* Staff

**411 Engineering Statistics I** *(I, 3)* Elementary probability theory, random variables, and probability distributions. Moment generating functions, expected values, bivariate normal distributions. Introduction to applied statistics in engineering. *(Lec. 3) Pre: MTH 243.* Staff

**412 Engineering Statistics II** *(II, 3)* Continuation of 411. Estimation, hypotheses tests, sampling theory, linear regression. Other engineering applications of applied statistics. *(Lec. 3) Pre: 411.* Staff

**422 Production Facilities Design** *(II, 3)* Analysis and design of production facilities. Line and manpower balancing. Design of material flow networks. Quantitative modeling and simulation applied to production facilities design. *(Lec. 3) Pre: 411, 432.* Staff

**430 Design and Analysis of Compensation Systems** *(II, 3)* Wage and employment theory, job evaluation, motivational systems, supplemental payments; labor force loading, leveling and scheduling. Analysis of influence of unions on labor price theory. *(Lec. 3) Pre: senior standing.* Staff

**432 Operations Research I** *(I, 3)* Introduction to major areas of operations research and their application to systems analysis. Linear programming, game theory, elementary network analysis, and related topics. *(Lec. 3) Pre: MTH 243, 215 or equivalent.* Staff

**433 Operations Research II** *(II, 3)* Introduction to inventory and replacement models, queuing theory, simulation, simple stochastic models, and their relation to selected problems. *(Lec. 3) Pre: 412, MTH 243.* Staff

**435 Introduction to Operations Research** *(I and II, 3)* Major areas of operations research and their application in systems analysis: development of models and techniques for solving problems such as linear programming, networks, queuing, inventory, and simulation. *(Lec. 3) Pre: MTH 243 or equivalent. Not for undergraduate concentration credit in industrial engineering.* Staff

**440 Materials Processing and Metrology I** *(II, 3)* Analyses of materials behavior characteristics under dynamic loading conditions for tools and cutting materials. Thermal analyses, mechanics of machine systems, power and efficiency. Processing control systems such as digital control, analog control, and numerical control. Design and analyses of systems of metrology. *(Lec. 2, Lab. 3) Pre: CHE 333 or 437, CVE 220.* Staff

**491, 492 Special Problems** *(I and II, 1-6 each)* Advanced work under the supervision of a member of the staff and arranged to suit the individual requirements of the student. *(Lec. or Lab. according to nature of problem.) Credits not to exceed a total of 12. Pre: permission of department.* Staff

**500 Network Application in Industrial Engineering** *(II, 3)*
**510 Human Factors** *(II, 3)*
**513 Statistical Quality Control** *(I, 3)*
**514 Special Topics in S.Q.C.** *(I, 3)*
**517 Applied Control Theory in Industrial Engineering** *(I, 3)*
**520 Material Handling** (I, 3)
**525 Simulation** *(II, 3)*
**533 Advanced Statistical Methods for Research and Industry** *(I, 3)*
**535 Industrial Reliability Engineering** *(II, 3)*

**540 Production Control and Inventory Systems** *(I, 3)*
**541 Materials Processing and Metrology II** *(I, 3)*
**545 Manufacturing Engineering: Design, Analysis, Synthesis** *(II, 3)*
**550, 551 Advanced Topics in Probabilistic Operations Research I and II** *(I and II, 3 each)*
**555 Engineering Applications of Mathematical Programming I** *(I, 3)*
**556 Engineering Applications of Mathematical Programming II** *(II, 3)*
**565 Theory of Scheduling** *(II, 3)*
**570 Operations Research Modeling in Health Care** *(II, 3)*
**591, 592 Special Problems** *(I and II, 1-6 each)*

## Insurance (INS)

*Chairperson:* Professor Booth (Finance and Insurance)

**301 Fundamentals of Risk Management and Insurance** *(I and II, 3)* Basic course in risk management and insurance which provides an introduction to all areas of insurance: property, liability, life, and health. *(Lec. 3)* Staff

**313 Property Insurance** *(II, 3)* Insurance coverage for direct and indirect damage to real and personal property with emphasis on fire and marine perils and major package policies. *(Lec. 3)* Staff

**314 Liability Insurance** *(I, 3)* Insurance coverages for commercial and personal lines with emphasis on liability, workers' compensation, suretyship, and other coverages. *(Lec. 3)* Staff

**322 Automobile Insurance** *(II, 3)* Detailed study of the law of negligence and automobile liability insurance, automobile physical damage insurance; financial responsibility laws; manuals; forms. *(Lec. 3)* Staff

**325 Life Insurance** *(II, 3)* Functions of life insurance, types of contracts, settlements options, simple programming, computation of premiums and reserves, dividends, contract interpretation. Industrial life, group insurance, pension plans, health insurance, company organization, state supervision. *(Lec. 3) Note: course prepares for R.I. state licensing examining in life and accident and health insurance and for Part I of charter life underwriter examination.* Staff

**333 Social Insurance** *(I, 3)* Federal, state, and private programs of economic security and social insurance including workers' compensation, non-occupational disability, pension plans, survivor's insurance, unemployment compensation, health insurance, employee benefit programs, guaranteed wages, etc. *(Lec. 3) Pre: ECN 125 and 126.* Staff

**491, 492 Directed Study** *(I and II, 3)* Directed readings and research work including insurance problems under the supervision of a member of the staff. *Pre: permission of instructor and junior or senior standing.* Staff

**510 Risk and Insurance** *(I, 3)*
**560 Management of Insurance Enterprises** *(II, 3)*
**570 Risk Management** *(II, 3)*

## Italian (ITL)

*Section Head:* Associate Professor Viglionese

**101, 102 Elementary Italian** *(I and II, 3 each) 101:* Elements of the language, pronunciation, grammar, inductive reading; exercises in reading, writing, and conversation. *102:* Continuation. *(Lec. 3)* Staff (F)

**103, 104 Intermediate Italian** *(I and II, 3 each) 103:* Development of facility in reading texts of moderate difficulty, supplemented by further work in grammar, conversation, and composition. *104:* Continuation. *(Lec. 3) Pre: 102 or permission of department.* Staff (F)

**205, 206 Conversation and Composition** *(I and II, 3 each)* Intensive course in conversation and composition. Promotes facility in speaking and understanding idiomatic Italian. *(Lec. 3) Pre: 104 or permission of department.* Staff

**301, 302 Civilization of Italy** *(I and II, 3 each)* The most important aspects of Italian civilization. *301:* From the Middle Ages to the end of the Renaissance. *302:* From the 17th century to the present. *(Lec. 3) Pre: 104 or permission of department.* Capasso and Staff

**305 Advanced Conversation and Composition** *(I or II, 3)* Intensive practice in spoken and written Italian. *(Lec. 3) Pre: 206 or permission of instructor. In alternate years, next offered fall 1982.* Viglionese

**309 Techniques of Translation** *(I or II, 3)* Principles and techniques of translating written Italian into English and vice versa. Text materials of different types used in practical work: scientific, journalistic, business and literary language. *(Lec. 3) Pre: 205 or 206 or permission of department.* Staff

**325, 326 Introduction to Italian Literature** *(I and II, 3 each)* Appreciation of literature. Representative texts of Italian narrative, drama, and lyric poetry. Elements of the methods of criticism. *(Lec. 3) Pre: 104.* Trivelli (A)

**391, 392 Masterpieces of Italian Literature** *(I and II, 3 each)* Reading in English translation of selected Italian authors of greatest significance. *391:* Medieval and Renaissance. *392:* Post-Renaissance to twentieth century. *(Lec. 3) May not be used for concentration credit in Italian.* Capasso (A)

**393 Contemporary Italian Fiction** *(I or II, 3)* Readings in translation of selected novels by twentieth-century authors. *(Lec. 3) May not be used for concentration credit in Italian. In alternate years, next offered fall 1981.* Trivelli (A)

**395 Dante's Divine Comedy** *(I or II, 3)* Reading in English translation of Dante's chief work. *(Lec. 3) May not be used for concentration credit in Italian. In alternate years, next offered spring 1982.* Viglionese (A) (F)

**408 The Italian Language** *(I or II, 3)* Advanced study of the structure of the Italian language. Analysis of linguistic elements as found in representative authors from thirteenth to twentieth century. *(Lec. 3) Pre: 104 or permission of instructor. In alternate years, next offered fall 1982.* Trivelli

**455 Selected Italian Authors** *(I or II, 3)* Works of one or more major authros of Italian literature. Specific author(s) designated the semester before the course is to be given by the department. *(Lec. 3) Pre: 325 or 326 or permission of instructor. In alternate years, next offered fall 1981.* Staff

**465 Topics in Italian Literature** *(I or II, 3)* Special topics or themes in Italian literature not treated or emphasized in other courses. *(Lec. 3) Pre: 325 or 326 or permission of instructor. In alternate years, next offered spring 1982.* Staff

**481, 482 The Works of Dante Alighieri** *(I and II, 3)* Dante's works with special attention given to the analysis and interpretation of *Divina Comedia* from the social, religious, philosophical, and political viewpoints of the Middle Ages. *(Lec. 3) Pre: 325 or 326 or permission of instructor. In alternate years, next offered 1982-83.* Viglionese

**497, 498 Directed Study** *(I and II, 3 each)* Designed particularly for the advanced student. Individual research and reports on problems of special interest. *(Lec. 3) Pre: acceptance of a project by a member of the staff and department approval.* Staff

## Journalism (JOR)

*Chairperson:* Professor Doctor

**110 Introduction to Mass Communications** *(I and II, 3)* Communications media viewed as an institutional order; relationship to other social orders, including political, industrial, and the military; role of ideas in shaping media policy, structure, and content. Recommended for majors in English, social sciences, and marketing. *(Lec. 3)* Staff

**212 News Writing and Reporting** *(I and II, 3)* Fundamentals of news gathering and factual writing for the mass communications media. Practice in writing news and feature

stories, with evaluation of each student's work. Students required to type. *(Lec. 2, Lab. 2) Pre: sophomore standing or permission of instructor.* Staff

**215 Pictorial Journalism** *(I and II, 3)* Introduction to use of graphic arts in journalism. Emphasis on photography as a communications medium, with instruction and practice in basic techniques of picture taking, processing, and editing. *(Lec. 2, Lab. 2) Pre: permission of instructor.* Staff

**271 Broadcast Journalism I** *(I and II, 3)* Gathering and processing news for radio broadcast. Principles of aural writing and reporting. Producing and programming public affairs, and techniques of broadcast presentation. Laboratory work includes newscasts with actuality segments. *(Lec. 2, Lab. 2) Pre: 212 or permission of instructor.* Staff

**300 Media Criticism in America** *(II, 3)* Contemporary and historic methods and perspectives for monitoring the performance of newspapers, magazines, motion pictures, broadcasting, and advertising. Examination of journalism reviews and press council operations. *(Lec. 3)* Staff

**301 The Minority Media** *(II, 3)* Journalistic and social factors in minority communications. Analysis of the Afro-American and other selected media with special attention to editorial processes, roles and peculiar problems. *(Lec. 3) Offered in alternate years.* Staff

**324 Magazine Article and Feature Writing** *(II, 3)* Practice in planning, researching, and writing articles and feature stories for magazines and newspaper feature sections. Analysis of markets, freelance and job opportunities. Articles written and submitted to publications. *(Lec. 3) Pre: junior standing and permission of instructor.* Staff

**325 Copy Editing** *(I and II, 3)* Practice in news selection and display copy editing, headline writing, illustration, and page make-up of newspapers and other periodicals. *(Lec. 2, Lab. 2) Pre: 212 or permission of instructor.* Staff

**326 Advanced Reporting** *(I and II, 3)* Supervision in planning, developing, and writing news stories for publication and/or broadcasting. Class sessions and outside assignments include press conferences with newsworthy individuals, investigative and interpretive reporting, and reporting in depth. *(Lec. 2, Lab. 2) Pre: 212, junior standing and permission of instructor.* Staff

**334 History of Journalism in the United States** *(I, 3)* Development of the newspaper during the early, middle, and later periods of the nation's growth; rise of other media; effects of economic and social changes on the press; future of journalism in the United States. *(Lec. 3) Pre: 110 or 212, and junior standing.* Staff

**372 Broadcast Journalism II** *(I and II, 3)* Gathering and processing news for television. Principles of television writing and reporting, television presentations and production. Alternative public affairs formats. Laboratory work includes field recordings and studio newscasts. *(Lec. 2, Lab. 2) Pre: 271 or permission of instructor.* Staff

**399 Field Work in Newspaper Publication** *(II, 1)* Practicum in the preparation of an entire edition of a daily newspaper, including reporting, editing, photography, editorial writing, and page makeup. *(Lab. 3) S/U credit. Pre: junior standing and permission of instructor.* Staff

**400 Opinion and Interpretation in Journalism** *(I, 3)* Editorial page policy, opinion columns, journals of opinion, and alternative media as vehicles for subjective accounts of events. Practice in organizing, researching and writing articles of opinion and interpretation. *(Lec. 2, Lab. 2) Pre: 212 and junior standing.* Staff

**434 Contemporary Issues in Mass Communications** *(II, 3)* Major contemporary problems in mass communications analyzed in their relationship to selected social, national, and international issues. *(Lec. 3) Pre: senior standing or permission of instructor.* Staff

**435 Theory of Communication** *(I, 3)* Principles of communication. Emphasis on the effects of mass communications, propaganda techniques in the mass media, and public opinion formation and change. *(Lec. 3) Pre: senior standing or permission of instructor.* Staff

**436 Fundamentals of Communication Research** *(II, 3)* Introduction to the techniques of concept formation, data collection and analysis with special reference to mass communication content, structure, and process. *(Lec. 3) Pre: senior standing or permission of instructor.* Staff

**438 Mass Media Law** *(I, 3)* Role of government and the law in the communication of news. Legal problems in the mass media including basic laws affecting freedom of the press, press privileges and responsibilities. Case studies. *(Lec. 3) Pre: senior standing or permission of instructor.* Staff

**441 International Communications** *(I, 3)* Comparison of the major mass media systems of the international community: their development, structure, and content as well as their roles in national and international relations. *(Lec. 3) Pre: senior standing or permission of instructor.* Staff

**442 Independent Study and Projects in Mass Communications** *(I and II, 1-3)* Individual reading programs, research or projects in journalism and mass communications. *Pre: junior standing, acceptance of a project by a member of the staff, and department approval.* Staff

**452 Public Relations Principles and Publications** *(I, 3)* Principles and procedures in public relations: emphasis on role of the public relations practitioner as a specialist in communications; analysis of publications produced as a part of public relations. *(Lec. 3) Pre: 212, senior standing or permission of instructor.* Staff

**461 Internship in News Writing and Reporting** *(I and II, 3)* Assignment to an approved sponsor for reporting and/or writing experience. Fifteen working days of practice time and a one-hour weekly meeting. Usually involves, but not limited to, newspaper work; if special interest warrants, a student may be assigned to another medium. *(Lec. 1, Prac. 8) Pre: 326 or 324 or 436; senior standing and permission of instructor. S/U credit.* Doctor

**462 Internship in Editing** *(I and II, 3)* Assignment to an approved sponsor for editing and/or related work experience. Fifteen working days of practice time and one-hour weekly meeting. Involves readying of copy for publication. *(Lec. 1, Prac. 8) Pre: 325 and 326, senior standing and permission of instructor. S/U credit.* Doctor

**463 Internship in Broadcast Journalism** *(I and II, 3)* Assignment to an approved sponsor for practicum in gathering and processing news for broadcast, or for development and/or production of public affairs materials for broadcast. Fifteen working days of practice time and a one-hour weekly meeting. *(Lec. 1, Prac. 8) Pre: 271 (for radio assignment), 271 and 372 (for TV); senior standing and permission of instructor. S/U credit.* Snodgrass

**464 Internship in Public Relations** *(II, 3)* Fifteen working days of practice time and one-hour weekly meeting. *(Lec. 1, Prac. 8) Pre: 212 and 452, senior standing, and permission of instructor. Not for graduate credit. S/U credit.* Thompson

## Languages (LAN)

*Chairperson:* Associate Professor Dornberg

**191, 192 A Beginning Foreign Language** *(I and II, 3)* Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation in a foreign language not included in regular departmental offerings. *(Lec. 3) Pre: 191 or equivalent in same language prerequisite for 192. May be repeated for different languages. Choice of specific language to be taught subject to availability of staff and student demand.* Staff

**193, 194 An Intermediate Foreign Language** *(I and II, 3)* Development of facility in speaking, listening comprehension, writing, and reading texts of moderate difficulty in a language not included in regular de-

partmental offerings. *(Lec. 3) Pre: 192 or equivalent, in the same language as 193; for 194: 193 in the same language. Choice of specific language to be taught subject to availability of staff and student demand.* Staff

## Latin (LAT)

*Section Head:* Associate Professor Cashdollar

**101, 102 Elementary Latin** *(I and II, 3 each)* Latin grammar and syntax. Exercises in reading prose. *(Lec. 3)* Staff (F)

**301, 302 Directed Readings in Latin** *(I and II, 3-12)* Study of Latin writers selected in accordance with the needs and background of the student. May be repeated with different topics for additional credit. *(Lec. 3-12) Pre: 102 or equivalent and permission of the instructor.* Staff (F)

**497, 498 Directed Study** *(I and II, 3 each)* Individual research and reports on problems of special interest. *Pre: acceptance of a project by a member of the staff and departmental approval.* Staff

## Latin American Studies (LAS)

*Committee Chairperson:* Assistant Professor Morin

**397 Directed Study for Senior Research Project** *(I, 3)* Research in a particular area of Latin American studies. Project must be approved by the LAS Committee. *Pre: approval of LAS Committee and instructor.* Staff

*The following are related courses offered in the Departments of Art, Economics, History, Languages, Political Science, Sociology and Anthropology, and Speech Communication, and in Foreign Language Film.*

**Anthropology**
303 New World Prehistory
315 Cultures and Societies of Latin America
324 Peasant Societies
470 Problems in Anthropology

**Art**
283 Topics in Non-European Art

**Economics**
338 International Trade and Policy
363 Economic Growth and Development

**Foreign Language Film**
327 Foreign Narrative Film

**History**
180 Introduction to Latin American Civilization
382 History of Modern Latin America
383 History of Modern Mexico
391 Directed Study or Research
580 Colloquium in Latin American History

**Political Science**
201 Introduction to Comparative Politics
431 International Relations
432 International Government

**Portuguese**
311, 312 Topics in the Civilization of the Portuguese-Speaking World
335, 336 Topics in the Literature of the Portuguese-Speaking World
497, 498 Directed Study

**Spanish**
304 Modern Spanish-American Literature and Culture
371 Spanish-American Short Story
470 Topics in Spanish-American Literature and Culture
497 Directed Study
571 Modern Spanish-American Authors
572 Evolution of Spanish-American Culture and Thought
590 The Hispanic Presence in the United States

**Speech Communication**
473 Intercultural Communication

## Library (LIB)

**345 Readings and Reports in Nutrition**
See Food Science and Technology, Nutrition and Dietetics 345.

## Library Science (LSC)

*Dean:* Professor Schlessinger

*Students in good standing may take up to six hours of graduate-level Library Science courses in their senior year with the permission of the Dean of the Graduate Library School.*

**500 Introduction to Libraries and Librarianship** *(I and II, 3)*
**502 Library Administration** *(I and II, 3)*
**503 Collection Development** *(I and II, 3)*
**504 Reference and Information Services** *(I and II, 3)*
**505 Organization of Library Materials** *(I and II, 3)*
**506 Technical Services** *(I and II, 3)*
**510 History of Books and Printing** *(I or II, 3)*
**511 Comparative Librarianship** *(I and II, 3)*
**512 History of Libraries and Librarianship** *(I or II, 3)*
**513 Intellectual Freedom and Censorship** *(I and II, 3)*
**514 The Library in Society** *(I, 3)*
**515 The Library and the Communication Process** *(I, 3)*
**520 The School Library/Media Center** *(I and II, 3)*
**521 Public Library Service** *(I or II, 3)*
**522 College and University Library Service** *(I or II, 3)*
**523 Special Library Service** *(I or II, 3)*
**527 Seminar in Library Administration** *(I and II, 3)*
**528 Multi-Media in the Library** *(I and II, 3)*
**530 Reading Interests of Children** *(I or II, 3)*
**531 Reading Interests of Adolescents** *(I or II, 3)*
**533 Children's Library Materials** *(I and II, 3)*
**536 Storytelling** *(I, 3)*
**537 Health Sciences Librarianship** *(I and II, 3)*
**538 Law Librarianship** *(I or II, 3)*
**540 Library Materials in the Humanities** *(I and II, 3)*
**541 Library Materials in the Social Sciences** *(I and II, 3)*
**542 Library Materials in Science and Technology** *(I and II, 3)*
**543 Government Publications** *(I or II, 3)*
**544 Information Science for Librarians** *(I or II, 3)*
**545 Technical Information Centers** *(I and II, 3)*
**546 Library Batch System Automation** *(I or II, 3)*
**550 Advanced Cataloging** *(I or II, 3)*
**551 Organization of Nonprint Materials** *(II, 3)*
**560 Research in Librarianship** *(I or II, 3)*
**562 Administration of Special Collections, Archives, and Manuscripts** *(I or II, 3)*
**564 Introduction to Library Conservation** *(I or II, 3)*
**566 Bibliographic Instruction in Libraries** *(I, 3)*
**570 Library Buildings and Facilities** *(I or II,3)*
**591, 592, 593 Independent Work** *(By Appt., 1-3 each)*
**595 Professional Field Experience** *(I, II, 3-6)*

## Linguistics (LIN)

*Section Head:* Associate Professor Rogers

**201, 202 Introduction to the Study of Language** *(I and II, 3 each) 201:* Basic principles of descriptive linguistic science. *202:* Principles of historical linguistics. *(Lec. 3)* Porter

**302 Principles of Morphology** *(II, 3)* Thorough survey of the general principles of linguistic morphology. Extensive practical exercises. *(Lec. 3) Pre: 201.* Porter

**320 Sociolinguistics** *(II, 3)* Presentation of the major areas of micro- and macro- sociolinguistics: speech acts, registers, repertoires, language attitudes, social correlates of phonological and syntactic features and changes. *(Lec. 3) Pre: 201 or APG 200.* Rogers, Martin, and Pollnac

**330 Dynamics of Language Distribution** *(II, 3)* Geolinguistic survey of present-day dis-

tribution of languages, and of factors affecting their spread and decline. Minority and colonial languages; language maintenance efforts; language contact phenomena. *(Lec. 3) Pre: 201.* Rogers

**402 Syntactic Analysis** *(I and II, 3)* A study of primary sources in contemporary research into syntactic structures. Emphasis on developing the ability to construct and test linguistic models. *(Lec. 3) Pre: 201 or ENG 330 or permission of instructor.* Arakelian

**414 Romance Linguistics** *(II, 3)* Evolution of the major literary Romance languages from late Latin with emphasis on phonology and morphology. The diffusion and dialectal fragmentation of Romance. *(Lec. 3) Pre: 202 or FRN 205, SPA 205, ITL 205, or permission of department. Some knowledge of Latin recommended but not required. Not for graduate degree program credit.* Rogers

**431 Applied Linguistics in the Language Laboratory** *(I, 1)* Principles of contrastive phonology and syntax and their application to the preparation, use, and evaluation of tape drills. Use of language laboratory equipment monitoring student exercises. Recommended for prospective teachers of language. *(Lec. 1) Pre: 9 credit hours of language courses numbered 300 or above, or permission of department.* Staff

**497, 498 Directed Study** *(I and II, 3 each)* Individual research and reports on problems of special interest. *Pre: 201 and acceptance of a project by a member of the staff and departmental approval.* Staff

*The following are related courses offered in the Departments of Anthropology, English, Languages, and Speech.*

APG 200 Language and Culture
APG 409 Anthropological Linguistics
ENG 430 American English and its Dialects
ENG 530 History of the English Language
ENG 536 Problems in Linguistics and Literature
FRN 503 History of the French Language
GER 409 History of the German Language
ITL 408 The Italian Language
PHL 440 Philosophy of Language
SPA 409 History of the Spanish Language
SPE 373 Phonetics
SPE 375 Language Development
SPE 410 Semantics

## Literature in English Translation

*Coordinator:* Associate Professor Kuhn (Languages)

*The following courses, offered within the Department of Languages may be used for concentration credit in Comparative Literature Studies. They may not be used for concentration credit in English or Languages.**

**Classics**
394 Greek Mythology and Religion: Gods and the Universe
395 Greek Mythology: Gods, Heroes, and Humans
396 Mythology of the Romans

**Comparative Literature Studies**
250 Themes and Myths
335 Interdisciplinary Studies in Comparative Literature
450 Studies in Comparative Literature

**French**
391 Literature up to 1789 in Translation
392 Nineteenth-Century Literature in Translation
393 Twentieth-Century Literature in Translation
394 Literary Topics in Translation

**German**
391, 392 Masterpieces of German Literature
393 Topics in German Literature

**Italian**
391, 392 Masterpieces of Italian Literature
393 Contemporary Italian Fiction
395 Dante's *Divine Comedy*

**Russian**
391, 392 Masterpieces of Russian Literature

**Spanish**
391, 392 Spanish Literature in Translation
393 Contemporary Spanish-American Literature in Translation

*The following courses offered within the Department of English may be used for concentration credit in Comparative Literature Studies and in English. They may not be used for concentration credit in Languages.*

**English**
261, 262 World Literature
366 Greek and Roman Drama
367 The Classic Epic
454 Modern British and European Drama
462 The Medieval and Modern Epic
468, 469 The European Novel
561 Modern European Novel

*Literature in English Translation courses and literature courses offered within the Departments of English and Languages constitute part of the offerings for a concentration in Comparative Literature Studies.*

## Management (MGT)

*Chairperson:* Professor Overton

**300 Personnel Administration** *(I or II, 3)* Functions of human resources management including group behavior, interpersonal relations, recruitment, and justice determination. Emphasis on developing analytical skills applied to personnel-related problems in organizational settings. *(Lec. 3) Not open to business administration majors; no credit if 303 has been taken.* Staff

**301 Fundamentals of Management** *(I and II, 3)* Management processes, organizational theory and behavior, quantitative aids, and environmental analysis. Emphasis on developing conceptual and analytical skills through examination of relevant theory, research, and practice. *(Lec. 3)* Staff

**303 Personnel Administration** *(I or II, 3)* Role of the personnel function in an organization. Employer-employee problems at various internal levels and their impact on the organization and its environment. Covers such areas as manpower planning, the recruitment process, training, employee relations, pension planning, and occupational safety in the public and private sector. *Cases and lectures. (Lec. 3) Pre: 301 recommended.* Staff

**304 Organizational Behavior: Individual** *(I or II, 3)* Interpersonal behavior in industry; human relations problems in complex organizations and analytical and interpersonal skills to deal with the human variable. Case analysis, experiential labs and role playing. *(Lec. 3)* Staff

**305 Organizational Behavior: Group** *(I and II, 3)* Theory and practice of work groups in the industrial and business environment. Conceptual and managerial skills for analyzing behavioral effects of group settings on individual, group, and organizational performance. *(Lec. 3) Pre: 301; for department majors, 304 or concurrent registration in 304.* Staff

**321 Labor Problems** *(I, 3)* Historical development of labor unions, changing composition of the labor force. Factors determining wage levels and employment in the firm and market. Analysis of mobility and occupational and regional wage differentials; the power of unions to raise wages; the role of investments in the human agent as a factor in economic growth. *(Lec. 3) Pre: ECN 126 or permission of instructor.* Staff

**380 Business and Society** *(I or II, 3)* Business ideologies and practical strategies for the modern corporation in society. Crucial social issues confronting the contemporary manager: changing life-styles, equal employment opportunity, pollution, investment abroad, government regulation, among others. *(Lec. 3)* Staff

**407 Organization and Management Theory** *(I and II, 3)* Analysis of complex organizational situations emphasizing managerial problems dealing with structure, coordina-

*CLA 394, 395, 396 may be used for concentration credit in Classics; RUS 391, 392 may be used for concentration credit in Russian.

tion, control, and integration. Conceptual skills for organizational analysis, including model and systems approaches. *(Lec. 3) Pre: 301 or permission of instructor.* Staff

**408 Organization Development and Change** *(I or II, 3)* Behavioral science applications to the planning of systematic organizational change and development. Theory, concepts, techniques, and cases for change agents and managers of change. *(Lec. 3) Pre: 301, 407, or permission of instructor.* Staff

**410 Business Policy** *(I and II, 3)* Analysis of the multi-functional organizational problems and issues confronting top management. *(Lec. 3) Pre: 301, ACC 201, FIN 321, MKT 323, senior standing or permission of instructor.* Staff

**422 Labor Law and Legislation** *(II, 3)* Federal and state labor relations statutes and court and agency decisions pertaining to private and public employment, regulations of trade unions, equal opportunity, wage and hour laws. *(Lec. 3) Pre: 321 or permission of instructor.* Staff

**423 Labor Relations** *(II, 3)* Public interest in labor relations and problems involved in effectuating collective bargaining. Major adjustments of public and private management to changes in labor policy of federal and state governments, community and labor unions. *(Lec. 2, Lab. 2) Pre: 303.* Staff

**431 Advanced Management Seminar** *(I or II, 3)* Integrated approach to problems in major areas of business management with emphasis on administrative and executive viewpoint. *(Lec. 3) Pre: 301.* Staff

**480 Small Business Management** *(I, 3)* Investigation and evaluation of the small business enterprise. Current literature studied to enable the student to understand and appreciate the small business. Required project performed with a small organization. *(Lec. 3) Pre: senior standing in CBA or permission of instructor.* Staff

**491, 492 Special Problems** *(I and II, 3 each)* Lectures, seminars, and instruction in research techniques, literature, and other sources of data in the field of organizational management, industrial relations, and law with application to specific individual projects. *(Lec. 3) Pre: permission of department.* Staff

**530 Management Theory and Practice** *(I and II, 2)*

## Management Science (MGS)

*Chairperson:* Associate Professor McLeavy

**101, 102 Introduction to Quantitative Analysis for Business and Economics** *(I and II, 3 each)* Selected mathematical tools and techniques for analysis of business and economic problems and as aid in process of decision making. Topics from finite and modern mathematics, applied differential and integral calculus. *(Lec. 3) Pre: 101 for 102.* Staff (M)

**201, 202 Managerial Statistics** *(I and II, 3 each) 201:* General statistical methods used in collection, presentation, analysis and interpretation of statistical data. Includes frequency distribution, measures of central tendency and dispersion, probability theory, sampling distribution, central limit theorem, law of large numbers, estimation and tests of hypothesis. *Pre: 102 or equivalent. 202:* Additional data analysis techniques including tests of independence and goodness of fit, regression, correlation, analysis of variance, time series, and index. *(Lec. 3) Pre: 201.* Staff

**207 Introduction to Computing in Management** *(I and II, 3)* Computer applications in management and programming fundamentals in one of the common computer programming languages—FORTRAN, BASIC, or PL/I. Assigned problems are debugged and run on the computer. *(Lec. 3)* Staff

**301 Advanced Quantitative Foundations** *(I, 3)* Mathematical topics and applications useful in analysis of managerial problems, including optimization with constraints, optimization for functions of many variables, multiple integration, differential equations, matrix and linear algebra. *(Lec. 3) Pre: 102 or permission of instructor.* Staff

**309 Operations Management** *(I and II, 3)* Production and operations management problems, models for their solution. Problems include project management, design and measurement of work, facilities location and layout, quality control, forecasting, production planning and inventory control. *(Lec. 3) Pre: 202 or permission of instructor.* Staff

**310 Requirement Planning and Operation Scheduling** *(II, 3)* Intensified coverage of the design and control of capacity as well as the scheduling of resources to operations. Topics include: aggregate planning, master scheduling, capacity planning, material requirements planning, and shop floor control. *(Lec. 3) Pre: 309 or permission of instructor.* Staff

**311 Forecasting and Inventory Control** *(I, 3)* Intensified coverage of time series and other forecasting techniques as well as the design of inventory control procedures. Topics include exponential smoothed forecasts, inventory planning for deterministic and probabilistic demand items, distribution, and purchasing. *(Lec. 3) Pre: 309 or permission of instructor.* Staff

**364 Quantitative Analysis of Managerial Operations** *(I, 3)* Management science techniques for non-majors, including linear programming, decision theory, simulation, and queuing. Applications in the functional areas. *(Lec. 3) Pre: 202 or permission of instructor.* Staff

**365, 366 Management Science I and II** *(I and II, 3 each) 365:* Analysis of mathematical and statistical models used in decision making in management. Deterministic and probabilistic models. Various applications to business. *Pre: 202 or permission of instructor. 366:* Continuation. *(Lec. 3) Pre: 365 or permission of instructor.* Staff

**370 Topics in Managerial Statistics** *(II, 3)* Theory and managerial applications of selected topics in statistics, including forecasting techniques, multiple regression, analysis of variance, and experimental and sample designs. *(Lec. 3) Pre: 202 and 301 or permission of instructor.* Staff

**445 Managerial Applications of Simulation** *(I, 3)* Evaluation and design of deterministic and probabilistic computer simulation models for operational and strategic levels of management. *(Lec. 3) Pre: 202 or permission of instructor.* Staff

**458 Advanced Production Management** *(II, 3)* Analysis of company operations within an industry context. Definition of unique strengths and weaknesses of a company within the environment in which it operates. Specific techniques, e.g.: PERT, production planning, selected in terms of company strategy. *(Lec. 3) Pre: 309 or permission of instructor.* Staff

**475 (375) Bayesian Statistics in Business** *(I, 3)* Bayesian decision theory as based on the concept of utility and personalistic interpretation of probability. Application of Bayesian inference to decision making under uncertainty in business. *(Lec. 3) Pre: 202 or permission of instructor.* Staff

**483 Data Processing Systems** *(I and II, 3)* Concepts, procedures and managerial issues of data processing systems. Students design and implement data processing systems using the COBOL language. *Pre: junior standing and 207 or permission of instructor.* Ageloff and March

**485 Management of Databases** *(I, 3)* Concepts and methods in management of data: database objectives, definitions, creations, design and implementation; data structures, data models; integrity security; data dictionaries and administration. Evaluation and use of existing systems. *Pre: 483 or permission of instructor.* March

**486 Management Systems Analysis and Design** *(II, 3)* Concepts, methods, and tools used in the design, development, and operation of computer-based information systems. *Pre: 483 or permission of instructor.* Ageloff and March

**491, 492 Special Problems** *(I and II, 1-3 each)* Lectures, seminars, and instruction in operations research techniques, emphasis on student research projects. *(Lec. 3) Pre: permission of instructor.* Staff

**579 Computing in Management** *(I, 2)*
**580 Quantitative Methods for Management Analysis** *(I, 3)*
**581 Management Statistics** *(II, 3)*
**585 Production and Operations Management** *(II, 3)*

## Marketing (MKT)

*Chairperson:* Professor Nason

**301 (323) Marketing Principles** *(I and II, 3)* Marketing from a managerial viewpoint with consumer emphasis. Product, pricing, channels, promotion. Marketing institutions, social welfare, and legal considerations. *(Lec. 3)* Staff

**311 (334) Consumer Behavior** *(I and II, 3)* Analysis of review of perception, motivation, and communication behaviors of consumers as they relate to marketing with particular emphasis upon advertising and selling. *(Lec. 3)* Staff

**321 (326) Social Issues in Marketing** *(II, 3)* Functioning of the market in an affluent society. Effect of marketing decisions by firms placed in the perspective of the collective interest of all participants in society. *(Lec. 3) Pre: 301 or permission of instructor.* Staff

**331 (335) Fundamentals of Advertising** *(II, 3)* Condensed but comprehensive introduction to advertising. Basic for advanced study of specific phases of advertising. *(Lec. 3) Pre: 301 or permission of instructor.* Staff

**332 (355) Advertising Copy and Layout** *(I, 3)* Practice in creation of effective advertising copy and layout for print and broadcast media. *(Lec. 2, Lab. 3) Pre: 331 or permission of instructor.* Staff

**341 (331) Analysis of Sales Methods** *(I, 3)* Analytical study of the knowledge and performance of the sales force. Economic, sociological, and psychological relationships to the sales efforts in the market place. *(Lec. 3) Pre: 301 or permission of instructor.* Staff

**371 (443) Retail Store Management** *(II, 3)* Store organization, operation and control. *(Lec. 3) Pre: 301.* Staff

**405 (411) Marketing Communications** *(I, 2)* The "communications mix" is explored in terms of a total promotional program. Characteristics of advertising media, sales promotion, public relations and publicity are surveyed. *(Lec. 4 for one-half semester; independent work required) Pre: 301 or permission of instructor.* Staff

**406 (410) Product Management** *(I, 2)* Development of product policies and strategies in a competitive environment. Emphasis on organization of the product management function, planning and developing new products, adjusting product strategies, and deleting products. *(Lec. 4 for one-half semester; independent work required) Pre: 301 or permission of instructor.* Staff

**407 (417) Channels of Distribution** *(II, 2)* Functions of distribution channels in society with emphasis on forces which shape their configuration and efficiency. Study of channel management with focus on channel development, control, policy, and practice. *(Lec. 4 for one-half semester; independent work required) Pre: 301 or permission of instructor.* Staff

**408 (419) Pricing Decisions** *(II, 2)* Analysis of pricing problems and environmental factors influencing pricing decisions. Emphasis on behavioral dimensions of demand and the effects of cost, competition, product characteristics, and the firm's objectives. *(Lec. 4 for one-half semester; independent work required) Pre: 301 or permission of instructor.* Staff

**409 (464) Marketing Policy and Problems** *(II, 3)* Summary course, emphasis on decision making in all marketing areas and on use of the case method. *(Lec. 3) Pre: 301 and senior standing.* Staff

**415 (462) Marketing Research** *(II, 3)* Nature, scope, and applications of marketing and advertising research. *(Lec. 3) Pre: MGS 202, MKT 301.* Staff

**416 (466) Quantitative Marketing Management** *(II, 3)* Quantitative techniques and analytical models in marketing management. Selected models are explored emphasizing formulation and requirements for application to marketing problems. *(Lec. 3) Pre: MGS 202 or equivalent, MKT 301.* Staff

**433 (474) Media Planning** *(I, 3)* Analysis of target markets leading to effective media planning and scheduling through use of major syndicated media services. *(Lec. 3) Pre: 331 or graduate standing or permission of instructor.* Staff

**434 (475) Advertising Campaigns** *(II, 3)* Analysis and execution of advertising campaigns. Utilizes skills from other advertising and marketing studies. Field trips. *(Lec. 3) Pre: 331, 415, or graduate standing, or permission of instructor.* Staff

**442 (432) Sales Management** *(I, 3)* Planning, organization, and control of sales operations. Emphasis is placed upon the sales manager's functions and problems. Cases. *(Lec. 3) Pre: 301.* Staff

**451 (452) International Marketing** *(II, 3)* Planning and organizing for international marketing operations from a commercial point of view. Differences in market arrangements, legal, cultural, and economic factors in various countries. Strategy of product pricing, promotion, channels. *(Lec. 3) Pre: 301.* Staff

**491, 492 (481, 482) Directed Study** *(I and II, 1-3 each)* Independent study supervised by department faculty. Seminar meetings concerned with specific marketing topics. *Pre: permission of department.* Staff

**501 (550) Marketing Theory and Practice** *(I and II, 2)*

## Mathematics (MTH)

*Chairperson:* Professor Roxin

**107 Introduction to Finite Mathematics** *(I and II, 3)* Concepts and processes of modern mathematics concerned with logic, sets, and the theory of probability. Role of these concepts in the social and physical sciences of today. *(Lec. 3) Not open to mathematics majors except for mathematics education students.* Staff (M)

**108 Topics in Mathematics** *(I and II, 3)* Introduces the non-mathematics student to the spirit of modern mathematics. Topics from number theory, topology, set theory, algebra; presupposes little mathematical background. Emphasis is on development of reasoning ability, not manipulative techniques. *(Lec. 3) Not open to mathematics majors except for mathematics education students.* Staff (M)

**109 Algebra and Trigonometry** *(I and II, 3)* Real numbers, notations and operations of algebra, introduction to elementary functions (polynomial, rational, exponential, logarithmic and trigonometric), analytic geometry. Designed for students who have had one year of high school algebra. *(Lec. 3) Not open to students who have had calculus in high school or college, except by permission of the department chairperson.* Staff (M)

**141 Introductory Calculus with Analytic Geometry** *(I and II, 3)* Integration of calculus and analytic geometry. Analytic geometry topics: graphing, straight line and conic sections; calculus: applications of the derivative in determining maxima and minima rates of change, study of rectilinear motion. Antidifferentiation introduced early and used to find area, volume, length of arc, and surface area. *(Lec. 3) It is recommended that students electing 141 have completed four units of high school mathematics including trigonometry.* Staff (M)

**141L Introductory Calculus Problem Solving Laboratory** *(I and II, 1)* Problem-solving sessions to accompany 141. Topics include analytic geometry, derivatives, maxima and minima, rate of change, antidifferentiation, area, volume, arc length. Emphasis on application to physics and engineering problems. *(Lab. 2) Pre: concurrent or prior registration in 141.* Staff

**142 Intermediate Calculus with Analytic Geometry** *(I and II, 3)* Completes the integrated study of both plane analytic geometry and of differential and integral calculus. Applications related to trigonometric, logarithmic, and exponential functions, including polar coordinates and vector algebra. *(Lec. 3) Pre: 141 or equivalent.* Staff (M)

**143 Computer Laboratory in Calculus** *(I and II, 1)* Illustration of some concepts of elementary calculus using computer; use of computer in some applications of calculus. Students will write simple programs. No previous computer or programming experience required. *(Lab. 2) Pre: prior or concurrent registration in 141.* Staff

**215 Introduction to Linear Algebra** *(I, 3)* Detailed study of finite dimensional vector spaces, linear transformations, matrices, determinants and systems of linear equations. *(Lec. 3) Pre: 142 or equivalent.* Staff

**217 Computer Laboratory in Linear Algebra** *(I and II, 1)* Illustration of some concepts of linear algebra using computer; use of computer in some applications of linear algebra. Students will do programming. No previous computer or programming experience required. *(Lab. 2) Pre: prior or concurrent registration in 215.* Staff

**243 Calculus and Analytic Geometry of Several Variables** *(I and II, 3)* Applications of analytic geometry and calculus to space of three dimensions, including multiple integration and partial differentiation. It also includes infinite series. *(Lec. 3) Pre: 142.* Staff

**244 Differential Equations** *(I and II, 3)* Classification and solution of differential equations involving one independent variable. Applications to all the physical sciences. Basic for further study in applied mathematics and for advanced work in physics and engineering. *(Lec. 3) Pre: 243.* Staff

**316 Algebra** *(II, 3)* Theory and structure of groups. Topics from ring theory, principal ideal domains, unique factorization domains, polynomial rings, field extensions, and Galois theory. *(Lec. 3) Pre: 215.* Staff

**322 Concepts of Geometry** *(II, 3)* Survey of geometrical systems including non-Euclidean, affine, and projective spaces and finite geometries. A modern view of Euclidean geometry using both synthetic and analytic methods. *(Lec. 3) Pre: 141 or equivalent.* Staff

**353 Foundations of Mathematics** *(I, 3)* Sets and relations. Construction of the integers, rational numbers, and real numbers from postulates. Completeness of the real number system. Axiom of choice. Transfinite cardinal and ordinal numbers. Transfinite induction. *(Lec. 3) Pre: 142 or equivalent.* Staff

**361 Mathematics Methods for Scientists and Engineers** *(I, 3)* Introduction to differential equations and difference equations including Laplace transform and Z-transform. Functions of several variables, Lagrange multipliers, calculus of variations. *(Lec. 3) Pre: 243.* Staff

**362 Advanced Engineering Mathematics I** *(II, 3)* Algebra of complex numbers, matrices, determinants, quadratic forms. Linear differential equations with constant coefficients. Partial differential equations. *(Lec. 3) Not for major credit in mathematics. Pre: 243.* Staff

**363 Advanced Engineering Mathematics II** *(I, 3)* Laplace and Fourier transforms. Analytic functions. Cauchy's theorem and integral formula. Power series in the complex domain. Laplace and Fourier inverse integrals. Introduction to probability. *(Lec. 3) Not for major credit in mathematics. Pre: 362 or equivalent.* Staff

**381 History of Mathematics** *(I, 3)* General survey course in development and philosophy of mathematics. Provides a cultural background and foundation for advanced study in various branches of the subject. *(Lec. 3) Pre: 142 or equivalent.* Staff

**382 Number Theory** *(II, 3)* Some of the arithmetic properties of the integers including number theoretic functions, congruences, diophantine equations, quadratic residues and classically important problems. *(Lec. 3) Pre: 141 or permission of instructor.* Staff

**391 Special Problems** *(I and II, 1-3)* Advanced work, under the supervision of a member of the staff and arranged to suit the individual requirements of the student. *Pre: permission of department.* Staff

**418 Matrix Analysis** *(I, 3)* Canonical forms, functions of matrices, characteristic roots, applications to problems in physics and engineering. *(Lec. 3) Pre: 215 or 362 or permission of instructor.* Staff

**420 Topics in Foundations** *(I, 3)* Especially designed for teachers of mathematics. Basic topics of mathematics from an advanced viewpoint, selected from sets, logic, mathematical structures, number theory, geometry. Coordinated with EDC 520 for students taking both concurrently. *(Lec. 3) Pre: 142 or permission of instructor.* Staff

**425 Topology** *(I, 3)* Abstract topological spaces and continuous functions. Generalizations of some classical theorems of analysis. *(Lec. 3) Pre: 243 or equivalent.* Staff

**435 Introduction to Mathematical Analysis I** *(I, 3)* Sets and functions, real topology, continuity and uniform continuity, derivatives, the Riemann integral, improper integrals. Detailed proofs emphasized. *(Lec. 3) Pre: 243.* Staff

**436 Introduction to Mathematical Analysis II** *(II, 3)* Sequences and series of functions, implicit and inverse function theorems, topology of Euclidean space, transformation of multiple integrals. Detailed proofs emphasized. *(Lec. 3) Pre: 435.* Staff

**437, 438 Advanced Calculus and Application I, II** *(I and II, 3 each)* Sequences, limits, continuity, differentiability, Riemann integrals, functions of several variables, multiple integrals, space curves, line integrals, surface integrals, Green's theorem, Stokes' theorem, series, improper integrals, uniform convergence, Fourier series, Laplace transforms. Applications to physics and engineering emphasized. *(Lec. 3) Pre: 243.* Staff

**441 Introduction to Partial Differential Equations** *(I, 3)* One-dimensional wave equation. Linear second order partial differential equations in two variables. Separation of variables and Fourier series. Non-homogeneous boundary value problems. Green's functions. *(Lec. 3) Pre: 244 or 361.* Staff

**444 Ordinary Differential Equations** *(II, 3)* Introduction to fundamental theory of ordinary and functional-differential equations. Series and numerical methods. Topics from stability, periodic solutions, or boundary-value problems. Applications to physics, engineering, biology. *(Lec. 3) Pre: 244 or 361 or 362.* Staff

**451 Introduction to Probability and Statistics** *(I and II, 3)* Theoretical basis and fundamental tools of probability and statistics. Probability spaces, properties of probability, distributions, expectations. Some common distributions and elementary limit theorems. *(Lec. 3) Pre: 243 or equivalent.* Staff

**452 Mathematical Statistics** *(II, 3)* Continuation of 451 in the direction of statistics. Basic principles of statistical testing and estimation, linear regression and correlation. *(Lec. 3) Pre: 451.* Staff

**456 Probability** *(II, 3)* Continuation of 451 in the direction of probability theory. Further problems in probability theory and applications. Markov chains and other stochastic processes. Generating functions, integral transforms, and other advanced techniques. *(Lec. 3) Pre: 451.* Staff

**461 Methods of Applied Mathematics** *(I, 3)* Topics selected from vector analysis, elementary complex analysis, Fourier series, Laplace transforms, special functions, elementary partial differential equations. Emphasis on development of techniques rather than mathematical theory. *(Lec. 3) Pre: 244 or 361 or 362.* Staff

**462 Functions of a Complex Variable** *(II, 3)* First course in the theory of functions of a single complex variable, including analytic functions, power series, residues and poles,

complex integration, conformal mapping and applications. *(Lec. 3) Pre: 243 or equivalent.* Staff

**471 Introduction to Numerical Analysis I** *(I, 3)* Interpolation, solution of nonlinear equations, numerical evaluation of integrals, special topics. *(Lec. 3) Pre: 243, CSC 201 or equivalent, or permission of instructor.* Staff

**472 Introduction to Numerical Analysis II** *(II, 3)* Numerical solution of ordinary differential equations, systems of linear equations, least squares, approximation, special topics. *(Lec. 3) Pre: 243, CSC 201 or equivalent, or permission of instructor.* Staff

**492 Special Problems** *(I and II, 1-3)* Advanced work, under the supervision of a member of the staff and arranged to suit the individual requirements of the student. *Pre: permission of department.* Staff

**513 Linear Algebra** *(I or II, 3)*
**515, 516 Algebra I, II** *(I and II, 3 each)*
**525 Topology I** *(I, 3)*
**535, 536 Measure Theory and Integration** *(I and II, 3 each)*
**545, 546 Ordinary Differential Equations I, II** *(I and II, 3 each)*
**550 Probability and Stochastic Processes** *(I, 3)*
**551 Mathematical Statistics** *(I, 3)*
**561 Advanced Applied Mathematics** *(II, 3)*
**562 Complex Function Theory** *(I, 3)*
**572 Numerical Analysis** *(II, 3)*
**591, 592 Special Problems** *(I and II, 1-3 each)*

## Mechanical Engineering and Applied Mechanics (MCE)

*Chairperson:* Professor T. J. Kim

**161 Mechanics I** *(I and II, 3)* Mechanics of particles including equilibrium of particles and systems of particles, kinematics and kinetics of the motion of particles, work-energy and impulse-momentum of particles. *(Lec. 3) Pre: MTH 141.* Staff

**162 Statics** *(I and II, 3)* Newton's laws of force systems in equilibrium and their effects on particles, systems of particles, and rigid bodies. Both scalar and vector methods of analysis developed. *(Lec. 3) Pre: MTH 141.* Staff

**261 Mechanics II** *(I and II, 3)* Mechanics of rigid bodies including equilibrium of rigid bodies, kinematics and kinetics of plane motion of rigid bodies, work-energy and impulse-momentum of rigid bodies, centroids and moments-of-inertia. *(Lec. 3) Pre: 161.* Staff

**263 Dynamics** *(I and II, 3)* Kinematic and kinetic study of motion of particles, systems of particles, and rigid bodies, acted upon by unbalanced force systems, using both scalar and vector methods; development of methods of analysis based on the direct application of Newton's laws, work-energy and impulse-momentum principles. *(Lec. 3) Pre: 162.* Staff

**317, 318 Mechanical Engineering Experimentation I and II** *(I and II, 3 each)* An integrated laboratory sequence for the junior and senior years; static and dynamic characteristics of instruments, calibration, experimental error propagation, planning of experiments from dimensional and error considerations, and a broad range of laboratory experiments in mechanical engineering. Pre: CSC 201, MCE 341, concurrent registration in 354 for 317; 317 for 318. Staff

**323 Kinematics** *(I, 3)* Analysis of mechanisms by analytical and related graphical methods; linkages, cams, gears, gear trains, differential mechanisms, escapements, computing, and miscellaneous mechanisms; vector methods including complex exponential representation of a vector in a plane. *(Lec. 3) Pre: EGR 102, MCE 263.* Hatch and Datseris

**341 Fundamentals of Thermodynamics** *(I and II, 3)* Basic principles and laws of thermodynamics and their relation to pure substances, ideal gases, and real gases. Use of thermodynamic property tables. Development of concepts of reversibility and availability. Thermodynamic diagrams and processes. *(Lec. 3) Pre: 263, MTH 243, credit or registration in PHY 341.* Brown, DeLuise, Test, and Henderson

**342 Mechanical Engineering Thermodynamics** *(I and II, 3)* Continuation of 341 including mixtures of gases and vapors, topics of gas dynamics and chemical thermodynamics, applications of thermodynamics to power cycles and refrigeration processes. *(Lec. 3) Pre: 341.* Brown, DeLuise and Test

**354 Fluid Mechanics** *(I and II, 3)* Physical properties of fluids, development of continuity, energy, and momentum concepts using vector methods; application to problems involving viscous and non-viscous fluids including boundary layer flows, flows in closed conduits and around immersed bodies. *(Lec. 3) Pre: 263 and MTH 244 or 461.* Dowdell, Hagist, Lessmann, and White

**366 Introduction to Systems Engineering** *(II, 3)* Systems analysis emphasizing control and vibration. Time and frequency domain techniques. State variables. Multidimensional and stochastic systems. Reliability. Interaction with economic, environmental, and human operator systems. *(Lec. 3) Pre: 372 and MTH 244, or permission of instructor.* Palm and Nash

**372 Engineering Analysis I** *(I, 3)* Application of advanced mathematical methods to solution of mechanical engineering problems with emphasis on the techniques of engineering analysis. *(Lec. 3) Pre: MTH 244, junior standing.* Lessmann and Sadd

**373 Engineering Analysis II** *(II, 3)* Continuation of 372. *(Lec. 3) Pre: 372.* Lessmann and Sadd

**391, 392 Honors Work** *(I and II, 1-3 each)* Independent study under faculty supervision for honors students. *Pre: admission to departmental honors program.* Staff

**401 (or OCE 401) Introduction to Ocean Engineering Systems I** *(I, 3)* Basic ocean engineering principles with emphasis on mechanics, thermodynamics and fluid-flow applications. Motion and equilibrium under the action of ocean forces. Propulsion, structure, and corrosion aspects. *(Lec. 3) Pre: 341 and 354, or permission of instructor. Not for graduate degree program credit.* Schenck and White

**402 (or OCE 402) Introduction to Ocean Engineering Systems II** *(II, 3)* Continuation of 401. Flow of fluids in ocean systems. Psychrometry and mass transfer in pressurized environments. Human response to pressure. Design aspects of diving systems. Integrated system studies. *(Lec. 3) Pre: 401. Not for graduate degree program credit.* Schenck and White

**406 Atomospheric Physics I**
See Physics 406.

**407 Atmospheric Physics II**
See Physics 407.

**410 (or OCE 410) Basic Ocean Measurements** *(I or II, 3)* Four or five basic ocean measuring exercises: current and tide, dissolved oxygen, wave frequency spectra, soil characteristics from cores, water depth, and bottom profiles. *(Lec. 1, Lab. 6) Pre: senior standing in engineering or permission of instructor. Not for graduate degree program credit.* Middleton and Schenck

**423 Design of Machine Elements** *(I, 3)* Design and analysis of machinery involving application of principles of strength of materials. General problem of determining adequacy of design; factor of safety, stress concentration, fatigue, creep temperature stress. Mechanical power transmission devices, gears, springs, shafts, fasteners, ball bearing reliability. *(Lec. 3) Pre: 323, CVE 220.* Hatch, Halliday, and Nash

**424 Dynamics of Machines** *(I, 3)* The forces in machinery, including linkages, intermittent motions, trains of mechanism, static, inertia and combined forces, balancing, critical speeds and gyroscopic effects. *(Lec. 3) Pre: 323, MTH 244.* Hatch and Datseris

**425 Lubrication and Bearings** *(I, 3)* Theory of hydrodynamic lubrication and bearing design, chemical aspects of lubricants and additives, bearing metals and their surface properties, friction and wear. *(Lec. 3) Pre: 354.* Halliday

**426 Advanced Mechanics of Materials** *(I, 3)* Introduction to continuum mechanics: stress, strain and deformation, constitutive equations. Theories of failure. Shear center and unsymmetrical bending of beam. Curved beams. Energy method. Torsion. *Pre: CVE 220.* Kim, Halliday, and Ghonem

**427 (or ZOO 427) Modeling and Analysis of Dynamic Systems** *(I, 3)* Modeling and analysis of complex systems with emphasis on feedback characteristics, modeling techniques and computer simulations. Examples from ecological, biological, engineering, and economic systems. *(Lec. 3) Pre: MTH 142 and elementary computer programming.* Palm

**428 Mechanical Control Systems** *(II, 3)* Analysis of mechanical, electromechanical, hydraulic, pneumatic, and thermal control systems; transient and frequency response of linear systems; Laplace transformation applied to automatic control systems, transfer functions, system stability; computer applications. *(Lec. 3) Pre: 263 or equivalent and MTH 244.* Palm

**429 Comprehensive Design** *(II, 3)* Creative design of engineering systems including possible socioeconomic and ecological considerations. Original design and analysis projects. Advanced topics in design: reliability and probability considerations, decision theory, optimum design, case studies of recent innovations. *(Lec. 3) Pre: 423.* Hatch, Halliday, and Nash

**432 Alternate Energy Systems** *(I, 3)* Topics include energy availability and analysis of conversion systems such as MHD, fuel cells, wind and ocean power, and solar-generated electricity. *(Lec. 3) Pre: 342, 354, PHY 341.* Lessmann and Dowdell

**434 Thermal Environmental Engineering** *(II, 3)* Application of the principles of thermodynamics and heat transfer to environmental problems. Topics will include thermal control of living spaces, solar heating and cooling, heat pumps, minimum energy consumption. *(Lec. 3) Pre: 342, 354, 448.* Test, Lessmann, and Henderson

**438 Internal Combustion Engines** *(I, 3)* Principles, design and operation of internal combustion engines, including cycles, combustion, fuels, detonation, carburation, cooling, supercharging, ignition, friction, and lubrication. Gasoline and diesel, two- and four-stroke cycles, and performance of various engines including the Wankel rotary. (Lec. 3) Pre: 342. Brown

**439 Applied Energy Conversion** *(II, 3)* Modern power systems including steam and gas turbines, nuclear power stations, fuel cells, and thermionic and thermoelectric devices. *(Lec. 3) Pre: 342 and 448 or permission of instructor.* Brown and Dowdell

**448 Heat and Mass Transfer** *(I, 3)* Transfer of heat by conduction, convection, and radiation in steady and unsteady states. Theory and application of dimensional analysis; heat and mass transfer in equipment such as heat exchangers and steam condensers. *(Lec. 3) Pre: 341.* DeLuise, Test, and Henderson

**455 Advanced Fluid Mechanics** *(I, 3)* Continuation of 354. Selected topics in advanced fluid mechanics including potential flows, compressible flow, fluid machinery, and electric and magnetic field effects. *(Lec. 3) Pre: 354.* Dowdell, Hagist, Lessmann and White

**464 Vibrations** *(II,3)* Elementary theory of mechanical vibrations, including the one-degree-of-freedom system, multimass systems, vibration isolation, torsional vibration, beam vibration, critical speeds, and vibration instruments. *(Lec. 3) Pre: 366 or permission of instructor.* Hatch, Halliday, and Nash

**466 Advanced Mechanics of Solids** *(II, 3)* Introduction to plane elasticity: thick cylinders, rotating disks. Stress concentration, bending of plates and shells; finite difference and element analyses; plastic bending, yield criteria; elastic instability. *Pre: 426 or permission of instructor.* Kim, Sadd and Shukla

**491, 492 Special Problems** *(I and II, 1-6 each)* Advanced work, under the supervision of a staff member, arranged to suit the individual requirements of the student. *(Lec. and Lab. according to nature of problem) Credits not to exceed total of 12. Pre: permission of department.* Staff

**503 (or ELE 503) Linear Control Theory** *(I or II, 3)*
**504 (or ELE 504) Optimal Control Theory** *(II, 3)*
**505 Optimization in Mechanical Engineering Design** *(I or II, 3)*
**521 Reliability Analysis and Prediction** *(II, 3)*
**523 Advanced Kinematic Analysis** *(I, 3)*
**524 Advanced Kinematic Synthesis** *(I, 3)*
**540 (or OCE 540) Environmental Control in Ocean Engineering** *(II, 3)*
**541 Thermodynamics** *(I, 3)*
**542 Statistical Thermodynamics** *(II, 3)*
**545 Heat Transfer** *(I, 3)*
**546 Convection Heat Transfer** *(II, 3)*
**550 Theory of Continuous Media** *(I, 3)*
**551 Fluid Mechanics I** *(I, 3)*
**552 Fluid Mechanics II** *(II, 3)*
**553 Flow of Compressible Fluids** *(II, 3)*
**563 Advanced Dynamics** *(I and II, 3)*
**564 Advanced Vibrations** *(I, 3)*
**565 Advanced Virbrations** *(II, 3)*
**571 Theory of Elasticity I** *(I, 3)*
**572 Theory of Elasticity II** *(II, 3)*
**573 Theory of Plates** *(I and II, 3)*
**574 Energy Methods in Solid Mechanics** *(II, 3)*
**575 Elastic Stability** *(I or II, 3)*

## Medical Technology (MTC)

**301 Medical Technolgy Seminar** *(I, 1)* Lectures, discussions, and demonstrations to relate college course work to the hospital laboratory. *(Lec. 1) Pre: junior standing and permission of instructor. S/U credit.* Staff

*The clinical courses in Medical Technology require senior standing and are available only to students who have been accepted into an affiliated Hospital School of Medical Technology.*

**401 Clinical Microbiology** *(I, 8)* The relationship of bacteria and bacterial diseases of man with emphasis on the application of procedures to medical diagnosis. Fungi, viruses, the rickettsias, and human parasites are also studied. Hospital Staff

**402 Clinical Chemistry** *(II, 8)* The chemistry of body constituents and their relationship to diagnosis of human disease. Principles and methods of analysis are emphasized. Hospital Staff

**403 Immunohematology** *(I, 4)* Instruction in drawing and processing blood and in ascertaining compatibility. Donor-recipient blood and tissue reactions are studied in detail. Hospital Staff

**404 Hematology** *(II, 6)* Morphology of the blood and blood-forming organs and the study of abnormalities associated with disease. The dynamics and diagnostic tests of hemostasis are also discussed. Hospital Staff

**405 Pathophysiology** *(I, 2)* An introduction to pathology. The correlation between pathological processes and clinical symptoms and the course of disease is studied. Hospital Staff

**406 Clinical Immunology** *(II, 2)* Formation, structure, and action of antigens and antibodies. Methods of immunization. The laboratory emphasizes serological procedures in the diagnosis of disease. Hospital Staff

**407 Clinical Microscopy** *(I, 2)* Lectures and laboratory practice in the analyses of body fluids. Hospital Staff

## Medicinal Chemistry (MCH)

*Chairperson:* Professor C. I. Smith

**342 Pharmaceutical Analysis** *(I and II, 3)* Principles and techniques of official and non-official procedures for the quantitative assay and qualitative control of drugs and pharmaceutical necessities. *(Lec. 2, Lab. 3) Pre: third-year standing and permission of department.* Smith

**443, 444 Organic Medicinal Chemistry** *(I and II, 3 each)* Selected compounds of medicinal and pharmaceutical importance.

Uses, syntheses, incompatibilities, correlation of physical properties, structures, and biological activity. *(Lec. 3) Pre: CHM 228, and MCH 342 and/or permission of instructor.* Abushanab, Panzica and Turcotte

**497, 498 Special Problems** *(I and II, 1-5 each)* Method of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. *(Lab. 3-15) Pre: permission of department.* Staff

**501 Radiopharmaceuticals** *(I, 3)*
**526 (or FSN 526) Lipid Chemistry** *(I, 3)*
**533 Advanced Drug Assay** *(I and II, 2-4)*
**548 (or PCG 548) Physical Methods of Identification** *(II, 3)*
**549 Synthesis** *(I and II, 3)*

## Microbiology (MIC)

*Chairperson:* Professor N. P. Wood

**201 Introductory Medical Microbiology** *(I and II, 4)* Required of all students in Nursing, Dental Hygiene, and Pharmacy. Lecture and laboratory designed to illustrate microbiological principles and techniques. For students in allied health professions. *(Lec. 2, Lab. 4) Pre: 1 semester of biology and 1 year of chemistry. Not open to students who have had 211.* Staff

**211 Introductory Microbiology** *(I and II, 4)* Introduction to microorganisms. Morphology, structure, metabolism, genetics, growth, populations in natural habitats, and their effects on the environment. For biological sciences majors. *(Lec. 2, Lab. 4) Pre: 2 semesters of biology, 1 semester of organic chemistry (can be taken concurrently). Not open to students who have had 201.* Staff

**361 Soil Microbiology** *(II, 4)* Living microbial populations, microenvironments, decomposition, and utilization of organic matters, mineralization, immobilization and microbial interactions. Isolation, enumeration, and estimation of microbial activity. Emphasis on microbial aspects of soil processes. *(Lec. 3, Lab. 3) Pre: 201 or 211; 1 semester of organic chemistry. In alternate years, next offered 1982-83.* Staff

**401 Quantitative Cell Culture**
See Biochemistry and Biophysics 401.

**403 Introduction to Electron Microscopy**
See Biochemistry and Biophysics 403.

**405 (or BCP 405) Electron Microscopy Laboratory** *(I, 2)* Introduction to the practical aspects of electron microscopy. Emphasis on acquisition of the following skills: tissue preparation, ultra-microtomy, operations of the electron microscope, and darkroom procedures. *(Lab. 6) Pre: prior or concurrent enrollment in 403 and permission of instructor.* Hufnagel

**410 (or ZOO 410) Introduction to Protistology** *(II, 3)* Taxonomic survey of all classes of protozoa, followed by descriptive biology of the ciliated protozoa. Topics include evolution, ultra-structure, physiology, genetics, development, ecology. Emphasis on recent advances. *(Lec. 2, Lab. 2) Pre: 4 courses in biological science; junior standing or permission of instructor. In alternate years, next offered 1981-82.* Hufnagel

**411 Advanced Bacteriology** *(I, 4)* Advanced treatment of growth, cytology, physiology, genetics, and classification of bacteria. *(Lec. 2, Lab. 6) Pre: 201, BCP 311 or permission of instructor.* Cabelli

**412 Food Microbiology** *(II, 3)* Analysis of water and milk; examination of dairy and other food products. *(Lec. 2, Lab. 4) Pre: 201 or 211 and 1 semester organic chemistry (may be taken concurrently).* Staff

**422 Industrial Microbiology**
See Plant Pathology-Entomology 422.

**432 Pathogenic Bacteriology** *(II, 3)* The more important microbial diseases, their etiology, transmission, diagnosis and control. Laboratory, emphasis on methods of diagnosis. *(Lec. 2, Lab. 3) Pre: 201 or 211 or 1 semester of organic chemistry.* Sperry

**453 Cell Biology**
See Botany 453.

**481, 482 Clinical Practicum** *(I and II, 2 each)* Supervised practical experience and training in clinical microbiology conducted at URI Health Services. *(Lab. 6) Pre: 432 and approval of department and instructor. Open only to seniors in microbiology curriculum. S/U only.* Health Services Staff

**491, 492 Research in Microbiology** *(I and II, 1-6 each)* Special problems in microbiology. Student required to outline his problem, carry on experimental work and present his conclusions in a report. *(Lab. 2 to 12) Open only to seniors in the microbiology curriculum.* Staff

**495, 496 Seminar in Microbiology** *(I and II, 1 each)* Preparation and presentation of papers on selected subject in microbiology. *(Lec. 1) Pre: permission of department. S/U credit.* Staff

**510 (or ZOO 510) Cell and Developmental Biology of the Motile Protista** *(II, 2)*
**521 (or BOT 521 or ZOO 521) Recent Advances in Cell Biology** *(I, 1)*
**533 Immunity and Serology** *(I, 3)*
**552 Microbial Genetics** *(II, 3)*
**576 (or OCG 576) Marine Microbiology** *(I, 3)*
**593, 594 The Literature of Bacteriology** *(I and II, 1 each)*

*Note: For Virology, see Animal Pathology; for Mycology, see Botany.*

## Military Science (MSC)

*Chairperson:* Professor O'Grady

**100 Introduction to Leadership** *(I, 1)* Develops leadership ability by placing students in challenging situations which require quick judgments, decisions, and teamwork. Includes leadership theory, rappelling, water survival, and cold weather operations. *(Lab. 2)* Staff

**105 Orienteering** *(II, 1)* Introduction to orienteering, to include map reading, compass use, and cross-country land navigation. Students will have the opportunity to compete in intercollegiate meets. *(Lab. 3)* Porter

**170 History of Modern Warfare** *(I, 3)* Study of warfare with emphasis on the period since the introduction of gunpowder. Influence of social systems, economics, leaders, and the major battles on warfare will be explored. *(Lec. 3)* House

**180 The American Military and Society** *(II, 3)* A look at how society and the military interact. Examination of the historical development of the military, the military industrial complex, military justice, race relations, drug abuse. *(Lec. 3)* Staff

**260 Comparative Military Systems** *(II, 3)* In-depth look at the military systems of the U.S., U.S.S.R., and the People's Republic of China. Exploration of manpower sources, training, equipment, education, social position, mission, and strategy. *(Lec. 3)* Staff

**270 Studies in Military Leadership** *(I, 3)* Analysis of historical and contemporary case studies in military leadership. Evaluation of basic principles influencing these cases. *(Lec. 3)* O'Halloran

**310, 320 Leadership and Management** *(I and II, 2 each)* Advanced courses: application of the principles of war, small unit tactics, leadership development, planning and execution of tactical problems. *(Lec. 2, Lab. 2) Pre: permission of department and successful completion of basic courses, or completion of basic camp or equivalent; for 320, 310.* Heslin

**330, 340 Organizational Management and Law** *(I and II, 3 each)* Advanced courses; military law, obligations and responsibilities of an officer, Army readiness program, administrative management, world change and military implications, logistics, the military team, internal defense and development. *(Lec. 3, Lab. 2) Pre: permission of department; for 330, 320; for 340, 310.* Shugart

## Music (MUS)

*Chairperson:* Professor Burns

**050 Performance Preparatory** *(I and II, 0)* Class or private instruction. Select appropriate letter and voice or instrument from the list under 251 below and add to course number, as 050E Violin. May be repeated for a second semester if work of the first is satisfactory. *(Lec. 1)* Staff

**101 Introduction to Music** *(I and II, 3)* Fosters a better understanding and appreciation of the world's great music. Consideration of musical styles, techniques and forms from the listener's standpoint. *(Lec. 3)* Ceo and Wry (A)

**111 Basic Musicianship** *(I and II, 3)* Use of folk, classical, and popular music to learn essentials of music reading and music theory. *Not open to music majors. (Lec. 3)* Wry (A)

**113, 114 Diatonic Harmony and Ear Training** *(I and II, 3 each) 113:* Rhythmic, melodic, and harmonic elements of music. Scales, intervals, and the chord structure. Sight-singing, rhythmic articulation, and melodic dictation. Part-writing, analysis, keyboard work, and harmonic dictation involving primary triads. *(Lec. 2, Lab. 3) Pre: concurrent or previous keyboard experience. 114:* Continuation, covering all diatonic triads, dominant and supertonic seventh chords, and modulation to closely related keys. *(Lec. 2, Lab. 3) Pre: 113.* Dempsey and Rankin

**117 Applied Composition** *(I and II, 1)* Private study in composition for students interested in original work in contemporary idioms. Emphasis on mastery of the basic craft and individual creative expression. May be repeated once for credit. *(Lec. 1) Pre: determined by audition.* Gibbs

**169 Percussion Instruments Class** *(II, 1)* Basic principles in performance and pedagogy of percussion instruments. *(Lec. 1) Open only to students in the music education curriculum.* Pollart

**170 Guitar for the Classroom Music Teacher** *(I, 1)* Development of the basic principles and pedagogy for use of guitar in the music classroom. *(Lec. 1) Registration limited to music education majors.* Fraioli

**171, 172 Piano Class** *(I and II, 1 each)* Development of basic techniques and musicianship for effective use of the piano in music classrooms. To earn credit in 172 each student must take the piano proficiency examination. *(Lec. 1) Open only to students in the music education curriculum.* Wry

**173, 174 Voice Class** *(I and II, 1 each)* Basic principles and pedagogy of singing, physiology, breathing, tone production, diction. *(Lec. 1) Open only to students in the music education curriculum.* Staff

**175, 176 String Instruments** *(I and II, 1 each)* Basic principles in performance and pedagogy of violin or viola and violoncello or bass viol. *(Lec. 1) Open only to students in the music education curriculum.* Dempsey and Chapple

**177, 178 Woodwind Instruments Class** *(I and II, 1 each)* Basic principles in performance and pedagogy of woodwind instruments, with emphasis on clarinet and flute. *(Lec. 1) Open only to students in the music education curriculum.* Giebler

**179, 180 Brass Instruments Class** *(I and II, 1 each)* Basic principles in performance and pedagogy of trumpet, French horn, baritone, trombone, and tuba. *(Lec. 1) Open only to students in the music education curriculum.* Burns

**181, 182 Intermediate Piano Class** *(I and II, 1 each)* Further development of basic keyboard performance. Improvised accompaniments to folk songs. Sight transposition. Some score reading. Further development of reading skills using materials on the level of Bartok: Mikrokosomos, Books 2 and 3, and Clementi: Sonatinas, Op. 36. Registrants must also take any part of the piano proficiency examination not previously passed. *(Lec. 1) Open only to students in the music education curriculum. Pre: 172.* Wry

**206 History of Jazz** *(SS, 3)* The nature and origin of jazz and its development as an American folk idiom: European and African heritages, blues, ragtime, dixieland, boogie-woogie, swing, bop, cool, funky, gospel, jazz-rock, free-form, and progressive. *Pre: 101 or permission of department.* Pollart

**208 (421) Jazz Improvisation I** *(I and II, 3)* An intensive study and practice of the formal elements of jazz improvisations. *(Lec. 1, Lab. 4) Pre: 114 and acceptance into a 400-level performance course.* Staff

**209 Jazz Improvisation II** *(II, 3)* Intensive study and performance of improvisation in jazz music with attention to blues, ballàd, jazz-rock, Latin jazz, and free jazz styles. *(Lec. 1, Lab. 4) Pre: 208 or permission of instructor.* Staff

**215, 216 Advanced Harmony and Ear Training** *(I and II, 3 each) 215:* Advanced rhythmic, melodic, and harmonic practice approached through sight-singing, dictation, analysis, keyboard work, and part-writing including original work. Covers all seventh chords, chromatic alteration, chromatic progression, and foreign modulation. *(Lec. 2, Lab. 2) Pre: 114 or equivalent. 216:* Continuation, covering ninth, eleventh, and thirteenth chords; melodic elaboration. Introduction to contrapuntal textures and contemporary idioms. *(Lec. 2, Lab. 2) Pre: 215.* Gibbs

**221, 222 History of Music** *(I and II, 3 each) 221:* Development of music primarily in Western culture from Ancient times through the Middle Ages, Renaissance and the Baroque periods. *222:* Continuation to include the Rococo, Classical, Romantic, and Modern eras. *(Lec. 3) Pre: 101 or placement exam.* Giebler

**241 Performance in Piano for Theory-Composition Majors** *(I and II, 2)* Reading scores at the piano and using the piano as a tool for composing or theoretical study and teaching. Private instruction. Four semesters. *(Studio 6) Pre: 182 or equivalent.* Staff

**242 Performance in Piano for Voice Majors** *(I and II, 2)* Reading as an adjunct skill for teaching voice, conducting choirs, or familiarizing oneself with the sound of accompaniment. Private instruction. Four semesters. *Not open to students with credit for 251B (Studio 6) Pre: 182 or equivalent.* Staff

**250 Recital Laboratory** *(I and II, 0)* Performance in and attendance at student afternoon recitals. Study of repertory and techniques of concert presentation including lectures by faculty and visiting artists. *May be repeated.* Staff

**251 Performance as Minor or Elective** *(I and II, 2)* Lower division. One private 40-minute lesson each week. Two levels; one per year, as prescribed in syllabi. Recital performances as required by department and instructor. *(Studio 40 min.) May be repeated for credit. Pre: audition. Requirements for each instrument available from department.* Staff

*Select area of instruction from the following and add to course number as 251B, Piano:*

| | | |
|---|---|---|
| A Voice | I Viola d'amore | R Trombone |
| B Piano | J Flute | S Baritone Horn |
| C Organ | K Oboe | |
| D Harpsichord | L Clarinet | T Tuba |
| E Violin | M Bassoon | U Percussion |
| F Viola | N Saxophone | V Guitar |
| G Violoncello | P Trumpet | W Harp |
| H Bass Viol | Q French Horn | Y Recorder |

**261 Performance Major** *(I and II, 3)* Lower division. One private 60-minute lesson each week. Two levels, one per year, as prescribed in syllabi. Recital performances as required by department and instructor. *(Studio 60 min.) Pre: audition. Requirements for each instrument available from department. See under 251 for areas of study.* Staff

**291 University Marching Band** *(I, 2)* Preparation of music, maneuvers, and shows for homes and away football games. *(Lab. 2)* Only one of the two credits for this course applies toward the bachelor of music degree requirements. *May be repeated.* Pollart

**292 Concert Band** *(II, 1)* Study and performance of concert band music. Open to all students by audition. *(Lab. 2) Pre: audition. May be repeated.* Pollart

**305 Folk Music** *(I, 3)* Folk songs, dances, and instruments of the world with emphasis upon American sources. *(Lec. 3)* Staff

**306 (218) Composing and Arranging for Jazz Ensemble I** *(II, 3)* Modern and traditional jazz arranging and compositional techniques, with emphasis on solo and concerted ensemble writing, voicing techniques and mechanics of line writing; unique composing styles of recognized jazz composers. *(Lec. 3) Pre: 215.* Staff

**307 Composing and Arranging for Jazz Ensemble II** *(II, 3)* Advanced linear and voicing techniques. Arranging and orchestrating standard and original material for small and large ensembles, with intensive score analysis. *Pre: 306.* Staff

**311, 312 Conducting** *(I and II, 2 each) 311:* Choral conducting. Special techniques for direction and rehearsal of choral groups. Problems of tone, diction and balance; organization of school, church, community and professional groups. Analysis of major choral works from conductor's standpoint. *(Lec. 2) Pre: 216.* Kent. *312:* Instrumental conducting. Problems of conductor; score reading, interpretation, techniques of rehearsal and direction. *(Lec. 2) Pre: previous or concurrent registration in 216.* Ceo

**317 Form and Analysis** *(I, 3)* Critical study of musical structure. Works of various composers are analyzed with reference to motive and phrase as generative elements in design. *(Lec. 3) Pre: 216.* Giebler

**321 Orchestration** *(II, 3)* Range, timbre, transpositions, and other characteristics of the instruments of the orchestra, singly and in combination. Exercises in writing for choirs of the orchestra and for full orchestra. Setting of one of small homophonic forms of full orchestra required. *(Lec. 3) Pre: 317.* Gibbs

**329 (or EDC 329) Music for the Elementary School Teacher** *(I and II, 3)* Fundamentals of music and methods employed in teaching music and making it a more meaningful and integral part of the curriculum in the elementary school. *(Lec. 3) Open only to elementary GTE students.* Wry

**341 Vocal Methods and Materials I** *(I, 2)* Organization of the vocal music program in the elementary school with emphasis on method and introduction to materials. *(Lec. 2) Pre: junior standing.* Staff

**342 Vocal Methods and Materials II** *(II, 2)* Organization of vocal music programs in the junior and senior high school with emphasis on method and introduction to materials. *(Lec. 2) Pre: junior standing.* Staff

**343 Instrumental Methods and Materials I** *(I, 2)* Organization of programs in the elementary and junior high schools, articulation of instrumental instruction, and analysis of method and materials. *(Lec. 2) Pre: junior standing.* Burns and Pollart

**344 Instrumental Methods and Materials II** *(II, 2)* Organization of programs in the high school with analysis of method and introduction to materials. *(Lec. 2) Pre: junior standing.* Burns and Pollart

**345, 346 Honors Project** *(I and II, 1-3 each)* Independent study under faculty supervision for honors students. *Pre: departmental approval of admission to honors program and acceptance of project by a member of the staff.* Staff

**350 Jazz Curriculum, Methods and Materials** *(II, 2)* Intensive study of extant jazz-centered curriculum and methodology models and available materials for classroom and rehearsal use. *(Lec. 2) Pre: 342 or 344 or teaching experience.* Motycka

**390 Piano Accompanying** *(I and II, 1)* Development of sightreading skills. Preparation and performance of accompaniments. *(Lec. 1) Pre: permission of piano faculty. May be repeated.* Fuchs or Rankin

**391 University Symphony Orchestra** *(I and II, 1)* Audition required. *(Lec. 3) May be repeated.* Ceo

**393 University Chorus** *(I and II, 1)* Audition required. *(Lec. 3) May be repeated.* Kent

**394 Symphonic Wind Ensemble** *(II, 1)* Audition required. *(Lec. 3) May be repeated.* Pollart

**395 Concert Choir** *(I and II, 1)* Audition required. *(Lec. 3) May be repeated.* Kent

**396 Jazz and Studio Ensemble** *(I and II, 1)* Performance and study of jazz and studio music as related to professional experiences. *(Lab. 3) Pre: audition.* Motycka

**397 University Chamber Orchestra** *(I and II, 1)* An ensemble which offers the study and performance of standard and modern repertoire for the smaller orchestral group. Literature will be selected from the Baroque, Rococo, Classic and contemporary periods. *(Lec. 1) Pre: all prospective members will be selected by audition. String players must be members of the University Orchestra, while others may qualify with permission of the conductor. Music majors will be given preference for admission. May be repeated.* Ceo

**399 Chamber Music Ensembles** *(I and II, 1)* Chamber music ensembles are designated as A Keyboard Ensemble, B String Ensemble, C Woodwind Ensemble, D Brass Ensemble, E Percussion Ensemble, G Madrigal Singers, H Guitar Ensemble, J Saxophone Ensemble, M Jazz Combo. Select appropriate letter and small ensemble from list and add to course number, as 399B String Ensemble. Other ensemble combinations may be added. Small instrumental ensembles are normally restricted to one performer per part. Audition required. *(Lec. 2) May be repeated.* Staff

**407 The Symphony** *(II, 3)* Survey of the development of the symphony from its beginnings in the mid-eighteenth century to the present. Includes a study of the evolution of the orchestra and the sonata form and considers cultural influences exerted upon the composers. *(Lec. 3) Pre: 222. In alternate years, next offered spring 1983.* Giebler

**408 The Opera** *(II, 3)* History of the opera from its beginning in Florence at the turn of the seventeenth century to the present. *(Lec. 3) Pre: 221, 222. In alternate years, next offered spring 1982.* Gibbs

**418 Composition** *(II, 3)* Original work in small binary, ternary, variation, and sonatina forms for various instrumental and vocal groups. *(Lec. 3) Pre: prior or concurrent registration in 317. In alternate years, next offered spring 1983.* Gibbs

**419 Composition** *(I, 2)* Continuation of 418, stressing original composition in larger forms and study of twentieth-century techniques. *(Lec. 2) Pre: 418.* Gibbs

**420 Counterpoint** *(I, 3)* Systematic study of motive manipulation with reference to traditional contrapuntal devices. Emphasis on harmonic counterpoint of late Baroque, more recent practices considered. Creative work in canon, invention, fugue, and chorale-prelude. *(Lec. 3) Pre: prior or concurrent registration in 317. In alternate years, next offered spring 1982.* Giebler

**422 Advanced Orchestration** *(II, 2)* Continuation of 321, emphasizing score reading and orchestrational styles. Transcription for orchestra of a major keyboard work required as a semester project. *(Lec. 2) Pre: 321.* Gibbs

**423 Sixteenth-Century Counterpoint** *(I or II, 3)* Modal polyphony based on the style of Palestrina and his contemporaries, covering *cantus firmus* techniques, imitation and various other contrapuntal devices in textures from two to four or more voices. *(Lec. 3) Pre: 216. In alternate years, next offered spring 1983.* Giebler

**430 The Renaissance Period** *(I, 3)* Music of the period (ca. 1400-1630) from Dunstable and Dufay to Palestrina and Monteverdi, covering the polyphonic mass, motet, chanson, madrigal, lied, ricercar, canzona, dance, variation, and related genres. *(Lec. 3) Pre: 221 and 222. In alternate years, next offered fall 1982.* Giebler

**431 The Baroque Era** *(I, 3)* Music of the so-called thorough-bass period (ca. 1600-1750) includes the emergence of opera and oratorio, autonomous instrumental music and the concerto style, culminating in works of Bach and Handel. *(Lec. 3) Pre: 221, 222. In alternate years, next offered fall 1981.* Giebler

**432 The Classic Era** *(II, 3)* Music of the period (ca. 1725-1815) beginning with the decorative gallant style of the Rococo com-

posers and culminating in the expressive architectonic textures in the works of Haydn, Mozart and early Beethoven. *(Lec. 3) Pre: 221, 222. In alternate years, next offered spring 1982.* Giebler

**433 The Romantic Era** *(I, 3)* Music of the nineteenth century within the context of the Romantic movement (1815-1875). Major composers and their works in various media are considered with respect to their historical significance. *(Lec. 3) Pre: 221, 222. In alternate years, next offered fall 1981.* Gibbs

**434 The Modern Era** *(I, 3)* Music of the twentieth century with emphasis on changing esthetics as revealed through the analysis of selected composition. *(Lec. 3) Pre: 221, 222. In alternate years, next offered fall 1982.* Gibbs

**438 Topics in Elementary School Music** *(I, 3)* Open-ended course examining significant materials, approaches, and current trends. Topics cover such areas as aesthetic education, process of musical development, eurythmics, Orff and Kodaly or an overview. *May be repeated with credit with change of topic. Pre: MUS (EDC) 329, 341 or equivalent. In alternate years, next offered spring 1983.* Wry

**441 Special Projects** *(I and II, 3)* Advanced work in research or of a creative nature in the field of history, literature, theory, composition, and education. Advisory basis, permission of department and instructor required for registration. *Pre: completion of the most advanced undergraduate course in the field. May be repeated once.* Staff

**446 Teaching General Music** *(II, 2)* Examination of philosophies, objectives, activities/experiences, and evaluative devices relating to general music study in the junior high school/middle school setting. *(Lec. 2) Pre: 341, 343, or teaching experience.* Motycka

**451 Performance as Minor or Elective** *(I and II, 2)* Upper division. One private 40-minute lesson each week. Two levels, one per year, as prescribed in syllabi. Recital performances as required by department and instructor. *(Studio 40 min.) May be repeated for credit. Pre: completion of performance minor lower division and permission of department. See under 251 for areas of study.* Staff

**452 Upper Level Performance as Minor** *(I and II, 2)* Extends lesson time for 45 to 60 minutes. *Pre: four prior credits in 451, concurrent registration in 451, and permission of instructor. May be repeated.* Staff

**455 Senior Recital** *(I or II, 0)* Performance of a public program of at least 20 minutes performing time after faculty examination. *Pre: concurrent registration in 451 and four or more prior credits of 451.* Staff

**461 Performance as Major** *(I and II, 4)* Upper division. One private 60-minute lesson each week. Two levels, one per year, as prescribed in syllabi. Recital performances as required by department and instructor. *(Studio 60 min.) Pre: completion of performance major lower division and permission of department. See under 251 for areas of study.* Staff

**465 Senior Recital for Performance Majors** *(I or II, 0)* Performance of a public program of at least 50 minutes performing time after faculty examination. *Pre: concurrent registration in 461 and eight or more prior credits in 461.* Staff

**481, 482 Piano Literature and Pedagogy** *(I and II, 2 each) 481:* intensive study of keyboard literature from 1700 to 1825. Analysis of styles and forms and their implications for performance. Teaching methods and materials. *(Lec. 2) Pre: 216, 222, and 251B or 261B or permission of department. 482:* Continuation involving literature from the nineteenth century to the present. *(Lec. 2) Pre: same as for 481. In alternate years, next offered 1981-82.* Fuchs

**483, 484 Vocal Literature and Pedagogy** *(I and II, 2 each) 483:* Concentrated study of vocal literature of the Baroque and Classic eras. Analysis of styles, forms and texts and their influences in performance. Diction, teaching methods and materials. *(Lec. 2) 484:* Continuation encompassing literature from the nineteenth century to the present. *(Lec. 2) In alternate years, next offered fall 1981. Pre: for 483 and 484: 216, 222, 251A or 261A or permission of department.* Langdon

**485 Opera Workshop** *(I and II, 1)* Performing techniques for the operatic singer. Coordination of music and drama with emphasis on body movement as it relates to historical periods and national characteristics. Development of professional standards and attitudes. *(Lec. 1, Lab. 2) May be repeated. Pre: 251A voice or permission of department. In alternate years, next offered 1982-83.* Langdon

**496 Jazz Workshop** *(SS, 1)* Intensive study of jazz theory and improvisation; rehearsal and performance of jazz literature. *(Workshop 2) Pre: 111 or permission of instructor.* Motycka

**499 Pedagogy of String Instruments and Performance of String Literature** *(SS, 4)* Exploration and implementation of successful methods of teaching orchestral string instruments combined with concentrated rehearsals and performance of classic and contemporary literature for strings. *Pre: audition. Degree of achievement open, but some college-level experience in string performance expected.* Staff

**512 Advanced Instrumental Conducting** *(I, 3)*

**537 Musical Thought and Expression** *(I, 3)*

**540 Advanced Principles of Music Education** *(II, 3)*

**545 Musical Aptitude and Achievement** *(I, 3)*

**548 Research in Music** *(II, 3)*

**551 Performance as Minor or Elective** *(I and II, 2)*

**555 Graduate Recital for Performance Minor** *(I and II, 0)*

**561 Performance Major** *(I and II, 6 each)*

**565 Graduate Recital for Performance Major** *(I and II, 0)*

**570 Graduate Project** *(I and II, 3)*

**590 Piano Accompanying** *(I and II, 1)*

**591 University Symphony Orchestra** *(I and II, 1 each)*

**594 Symphonic Wind Ensemble** *(II, 1)*

**595 Concert Choir** *(I and II, 1 each)*

**596 Jazz and Studio Ensemble** *(I and II, 1)*

**598 Chamber Music Ensemble** *(I and II, 1 each)*

## New England Studies (NES)

*Director:* Associate Professor Arakelian

**300 The New England Experience** *(SS, 3)* Introduction to life in New England, past and present, through varying disciplines focusing on a new topic each summer. *May be repeated for credit when emphasis changes. (Lec. 3)* Staff

**310 New England** *(I or II, 3)* Introduction to life in New England, past and present, through varying disciplines of the social sciences, the physical sciences, the humanities, and arts. Team-taught with field work. *(Lec. 3)* Staff

**400, 401, 402, 403 Special Topics in New England Studies** *(SS, 1 each)* Specializied topics in the study of New England offered by specialists in the field. *( Lec. 1) May be repeated with different topics.* Staff

**500 Readings in the New England Experience** *(SS, 4)*

## Nuclear Engineering (NUE)

*Chairperson:* Professor Estrin

**581 (or CHE 581) Introduction to Nuclear Engineering** *(I and II, 3)*

**582 (or CHE 582) Radiological Health Physics** *(I, 3)*

**585 (or CHE 585) Measurements in Nuclear Engineering** *(I, 3)*

**586 (or CHE 586) Nuclear Reactor Laboratory** *(II, 3)*

## Nursing (NUR)

*Dean:* Professor Tate

**101 Basic Concepts for Helping Professionals** *(I and II, 2)* Introduction to concepts of adaptation, communication, and dynamics of helping. Emphasis on self-development through individual and group processes by exploring ways to meet common needs. *(Rec. 2)* Staff

**150 Human Sexuality** *(I and II, 3)* Interdisciplinary approach to the study of individual and societal determinants in the development, integration, and expression of human sexuality and a code of sexual behavior. Hirsch and Staff (S)

**211 Nursing in Contemporary Society** *(I and II, 3)* Trends and issues in professional nursing and nursing education. Adaptation level theory and related concepts with emphasis on utilization of nursing process. *(Lec. 3) Pre: registered nurse standing or permission of instructor.* Houston

**220 Basic Concepts of Professional Nursing Practice** *(I and II, 4)* Basic course utilizing beginning concepts of nursing with clients who have simple health problems requiring application of the nursing process; includes learning experiences in manual and psychosocial skills. *(Lec. 2, Lab. 8) Pre: 101 and foundation courses in physical and social sciences listed in curriculum.* Evans and Staff

**231 Care of the Adult I** *(I and II, 6)* Emphasis on analysis of adult nursing problems through application of scientific principles and concepts in biomedical as well as psychosocial sciences within the conceptual framework of adaptation-level theory. *(Lec. 6) Pre: foundation courses in physical and social sciences listed in curriculum, 220 or R.N. status.* Joseph and Staff

**232 Care of the Adult Practicum I** *(I and II, 4)* Emphasizes skills and knowledge in individualized nursing process applying the adaptation-level theory for critical assessment of nursing action. *Must be taken concurrently with 231.* Joseph and Staff

**301 Parent and Child Health Nursing** *(I and II, 7)* Concepts and theories related to maintenance of and interference in health during phases of child bearing and child rearing. Emphasizes the role of nurses in promoting high-level adaptation. *Pre: HCF 200 or PSY 232; PHC 226 and NUR 231, 232. Must be taken concurrently with 302.* Hirsch and Staff

**302 Parent and Child Health Nursing Practicum** *(I and II, 4)* Application of nursing process to the health needs and problems of parents and children in selected clinical situations. *Use of automobile or funds to meet cost of public transportation preferable. Must be taken concurrently with 301.* Hirsch and Staff

**311 Mental Health and Psychiatric Nursing** *(I and II, 3)* Development of the basic knowledge and understanding necessary to the use of self as a therapeutic agent as related to mental health and illness. Application to all areas of nursing. *(Lec. 3) Pre: 231, 232. Must be taken concurrently with 312.* Garner and Staff

**312 Mental Health and Psychiatric Nursing Practice** *(I and II, 3)* Supervised experience in the development of the ability to use oneself as a therapeutic agent as related to mental health and illness. Application to all areas of nursing. *(Lab. 9) Pre: 231, 232. Must be taken concurrently with 311. S/U credit.* Garner and Staff

**321 Community Health Nursing** *(I and II, 3)* Introduction to basic principles of public health and community health nursing. Emphasis on family/group centered approach to health care. *(Lec. 3) Pre: 301, 302.* Schwartz-Barcott and Staff

**322 Community Health Nursing Practicum** *(I and II, 4)* Clinical nursing practice experience in a variety of community-based settings. Emphasis on family. Experience in Community Health Program development. *Use of automobile or funds to meet cost of public transportation required. (Lab. 12) Must be taken concurrently with 321.* Staff

**333 Complex Clinical Nursing** *(I and II, 5)* Application of adaptation-level theory to systematic study of nursing problems related to complex and comprehensive patient care in various health-care phases and settings. *(Lec. 5) Pre: 301, 302 and 311, 312; senior standing. Must be taken concurrently with 334.* Waldman and Staff

**334 Complex Clinical Nursing Practicum** *(I and II, 5)* Application of nursing process based on adaptation-level theory to patients' complex nursing problems. Emphasis on continuity of nursing through crisis and health maintenance. *(Lab. 15) Pre: 301, 302, and 311, 312; senior standing. Must be taken concurrently with 333.* Waldman and Staff

**335 Organization and Leadership in Nursing** *(I and II, 2)* Seminar in systematized examination and study of theories and concepts of leadership, group process, and organizational behaviors in nursing. Emphasis on study of complexities of nursing within situational and organizational framework. *Pre: 301, 302 and 311, 312; senior standing.* Manfredi and Staff

**350 Conference on Professional Nursing** *(I and II, 2)* Major nursing and health issues. Emphasis on the professional nurse's responsibility to the profession and to the community in which she lives. *(Lec. 2) Pre: senior standing.* Houston and Feather

**360 Impact of Death on Behavior** *(I and II, 3)* Seminar to explore the human experience of dying and the issue of quality of life. Group discussion focuses on the effect that individual and social values and medical and social structures have on one's grief response and bereavement process. *(Lec. 3)* Staff (L)

**390 Directed Study** *(I and II, 3)* Honors thesis or equivalent independent project relating to the nursing major. Faculty guidance in problem delineation, development and drafting of a study plan in the area of a student's special interest. Project need not be completed in one semester, but no more than three credits allowed. *Pre: admission to College of Nursing.* Staff

**495 Expanded Nursing Assessment Skills** *(I or II, 3)* Expansion of nursing assessment skills including health history taking and physical, psychological, and social assessment skills. Specific physical assessment skills included are inspection, auscultation, percussion, and palpation. *(Lec. 2, Lab. 3) Not acceptable for graduate program credit in nursing. Pre: permission of instructor.* Castro and O'Flynn

**501 Theoretical Study of Phenomena in Nursing** *(I or II, 3)*
**502 Practicum in the Study of Phenomena in Nursing** *(I or II, 3)*
**505 Nursing Research** *(I or II, 3)*
**506 Independent Study in Nursing** *(I and II, 2-6)*
**510 Advanced Leadership and Nursing Role Development** *(I or II, 3)*
**511 Advanced Mental Health Nursing I** *(I or II, 3)*
**512 Practicum in Advanced Mental Health Nursing I** *(I or II, 3)*
**513 Advanced Mental Health Nursing II** *(I or II, 2)*
**514 Practicum in Advanced Mental Health Nursing II** *(I or II, 4)*
**521 Theoretical Study of Major Problems in Nursing Practice** *(I or II, 3)*
**522 Practicum in the Study of Major Problems in Nursing Practice** *(I or II, 3)*
**531 Primary Health Care Nursing I** *(I or II, 3)*
**532 Practicum in Primary Health Care Nursing I** *(I or II, 3)*
**533 Primary Health Care Nursing II** *(I or II, 3)*
**534 Practicum in Primary Health Care Nursing II** *(I or II, 6)*
**541 Theoretical Study of Nursing Education** *(I or II, 3)*
**542 Practicum in Nursing Education** *(I or II, 3)*
**551 Theoretical Study of Nursing Administration** *(I or II, 3)*
**552 Practicum in Nursing Administration** *(I or II, 3)*

## Ocean Engineering (OCE)

*Chairperson:* Professor Middleton

**346 (or PED 346) Skin and Scuba Diving, Beginners** *(I, 2)* Emphasis on basic physical principles, hazards, selection of equipment, and techniques. *(Lec. 1, Lab. 2) Pre: permission of instructor.* McAniff

**347 (or PED 347) Skin and Scuba Diving, Advanced** *(II, 2)* Emphasis on the skill needed for advanced scuba activities as related to deep dives, salvage. *(Lec. 1, Lab. 2) Pre: 346.* McAniff

**351, 352 Plant Design and Economics**
See Chemical Engineering 351, 352.

**401, 402 Introduction to Ocean Engineering Systems I and II**
See Mechanical Engineering 401, 402.

**403, 404 Introduction to Ocean Engineering Processes I and II**
See Chemical Engineering 403, 404.

**406 Introduction to Coastal and Ocean Engineering**
See Civil and Environmental Engineering 406.

**407 Project in Ocean Engineering**
See Civil and Environmental Engineering 407.

**410 Basic Ocean Measurements**
See Mechanical Engineering 410.

**411 Basic Coastal Measurements**
See Civil and Environmental Engineering 411.

**500 Basic Ocean Engineering** *(II, 3)*
**512, 513 Hydrodynamics of Floating and Submerged Bodies I and II** *(I and II, 3)*
**521 Materials Technology in Ocean Engineering** *(I, 3)*
**524 (or MCE 524) Marine Structural Design** *(I or II, 3)*
**534 (or CHE 534) Corrosion and Corrosion Control** *(II, 3)*
**535 (or CHE 535) Advanced Course in Corrosion** *(II, 3)*
**540 (or MCE 540) Environmental Control in Ocean Engineering** *(II, 3)*
**555, 556 Ocean Engineering Systems I and II** *(I and II, 3 each)*
**560 Introduction to Data Collection Systems** *(I, 3)*
**561 Introduction to the Analysis of Oceanographic Data** *(I, 3)*
**565 Ocean Laboratory I** *(I or II, 3)*
**566 Ocean Laboratory II** *(I or II, 3)*
**571 (or ELE 571) Underwater Acoustics I** *(I, 3)*
**587 Submarine Soil Mechanics** *(I, 3)*
**591, 592 Special Problems** *(I and II, 1-6 each)*

## Oceanography (OCG)

*Dean:* Professor Knauss

**401 General Oceanography** *(I and II, 3)* General survey in the major disciplines including geological, physical, chemical, and biological aspects integrated into a conceptual approach to the ocean sciences. *(Lec. 3) Pre: at least one laboratory course in a physical or biological science and junior standing or above.* Staff (N)

**491 Ocean Studies** *(I and II, 15)* Full-time intensive work experience with Graduate School of Oceanography research staff at Narragansett Bay Campus. Student expected to participate in research program, seminars and other activities of Bay Campus. *Pre: junior year standing in natural sciences, natural resources, or engineering, plus permission of staff. Not for graduate credit. S/U only.* Jeffries and Staff

**501 Physical Oceanography** *(I, 3)*
**509 Ecological Aspects of Marine Pollution** *(II, 3)*
**510 Descriptive Physical Oceanography** *(II, 3)*
**521 Chemical Oceanography** *(II, 3)*
**524 Chemistry of the Marine Atmosphere** *(II, 3)*
**540 Geological Oceanography** *(II, 3)*
**544 Seminar in Petrogenesis** *(I, 3)*
**545 Geomagnetism and Paleomagnetism** *(I, 3)*
**561 Biological Oceanography** *(I, 3)*
**571 Benthic Environment** *(I, 3)*
**574 Biology of Marine Mammals** *(II, 3)*
**576 (or MIC 576) Marine Microbiology** *(I, 3)*

## Pharmacognosy (PCG)

*Chairperson:* Professor Worthen (Pharmacognosy and Environmental Health)

**445, 446 General Pharmacognosy** *(I and II, 3)* Natural products of biological origin as important pharmaceuticals. Sources, process of isolation and general fundamental properties. *(Lec. 3) Pre: CHM 228, BIO 101, 102, PHC 333, or permission of department.* Worthen and Lasswell

**447 General Pharmacognosy Laboratory** *(I and II, 1)* Introduction to and application of laboratory methods utilized in the preparation, identification, isolation, and purification of pharmaceuticals from natural sources. *(Lab. 3) Pre: CHM 226, BIO 101, 102, or equivalent.* Lasswell

**459 Public Health** *(I and II, 3)* Principles of prevention and control of disease and application of this information to current health problems. *(Lec. 3) Pre: MIC 201, PCG 446, or permission of instructor.* Worthen

**497, 498 Special Problems** *(I and II, 1-3 each)* Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing acceptable report. *(Lab. TBA) Pre: permission of department for undergraduate students only.* Staff

**521, 522 Seminar** *(I and II, 1 each)*
**532 (or PHC 532) Pharmaceutical Sterile Products** *(I, 3)*
**533 Medicinal Plants** *(I and II, 2)*
**536 Antibiotics** *(II, 3)*
**548 Physical Methods of Identification** *(II, 3)*
**551, 552 Chemistry of Natural Products** *(I and II, 3 each)*
**597, 598 Special Problems** *(I and II, 1-3 each)*

## Pharmacology and Toxicology (PCL)

*Chairperson:* Professor DeFeo

**221 Dental Therapeutics** *(I, 2)* Medicinal agents, their actions and therapeutic uses with special emphasis on substances employed in dental practice. *(Lec. 2) For students in dental hygiene.* Staff

**225 Pharmaceutical Calculations and Introduction to Pharmacology**
See Pharmacy 225.

**226 Pharmacology and Therapeutics** *(II, 3)* Continuation of 225 with special emphasis on properties, actions, uses, dosage, and toxicology of drugs used in the treatment of disease. *(Lec. 3) Pre: 225. For students in the College of Nursing.* Swonger

**338 (or PHC 338) Pharmacology and Biopharmaceutics** *(II, 4)* Physiochemical relationships underlying drug action including biopharmaceutical approaches and clinical aspects of pharmacokinetics. *(Lec. 4) Pre: third-year standing and approval of departments.* DeFeo, Rhodes, Greene and Birmingham

**436 (or PSY 436) Psychotropic Drugs and Therapy** *(II, 3)* Interaction of drug and nondrug therapy and of physiological and psychological origins of psychopathology. Intended for advanced undergraduate and graduate students interested in clinical psychology. *(Lec. 3) Pre: any one of the following: BIO 102, ZOO 111, 121, PSY 381 or permission of instructor.* Swonger

**438 (or PSY 438) Psychotropic Drugs and Behavior** *(I or II, 3)* Basic principles of psychopharmacology as applied to important classes of psychotropic drugs including illicit as well as therapeutic agents. *(Lec. 3) Pre: any one of the following: BIO 102, ZOO 111, 121, PSY 381 or permission of instructor. Not for pharmacy students.* Swonger

**441, 442 General and Clinical Pharmacology** *(I and II, 4 each)* Action of drugs on physiological function with reference to responses by tissue systems. Toxic effects,

mechanism of action, dosage, and pertinent clinical aspects. *(Lec. 4) Pre: third-year standing.* DeFanti and Staff

**443 General Pharmacology Laboratory** *(I and II, 1)* Effects of drugs on physiological function with reference to responses by tissue systems. Toxic effects, mechanism of action, and dosage. *(Lab. 3) Pre: fourth-year standing or permission of department.* Swonger

**497, 498 Special Problems** *(I and II, 1-3 each)* Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. *(Lab. TBA) Pre: permission of department.* Staff

**521, 522 Seminar** *(I and II, 1 each)*
**542 Evaluation of Drug Effects** *(II, 5)*
**544 Forensic Toxicology** *(II, 3)*
**546 Advanced Toxicology** *(II, 3)*
**550 Operant Analysis of Behavior** *(I, 3)*
**562 Psychopharmacology** *(II, 3)*
**564 Psychopharmacology Laboratory** *(II, 1-3)*
**572 Neural Bases of Drug Action** *(I, 3)*
**580 (or ELE 580) Experimental Animal Techniques** *(II, 3)*

## Pharmacy (PHC)

*Chairperson:* Professor Rhodes

**225 (or PCL 225) Pharmaceutical Calculations and Introduction to Pharmacology** *(I, 2)* Introduction to drugs, mechanisms of action, and mathematical concepts of dosage and strength. *(Lec. 2) For students in the College of Nursing.* Paruta and DeFeo

**333 General Pharmacy** *(I, 4)* Introduction to mathematical concepts, principles, and processes encountered in the formulation and preparation of clinical dose forms. *(Lec. 3, Lab. 4) Pre: third-year standing.* Osborne

**338 Pharmacology and Biopharmaceutics** See Pharmacology and Toxicology 338.

**345 Pharmaceutical Technology** *(I, 3)* Application of physical-chemical principles and laws to pharmaceutical systems: equilibria, solubility phenomena, particle size, rheology stability testing. *(Lec. 3) Pre: 333.* Birmingham, Osborne, Paruta, and Rhodes

**346 Dose Form Technology** *(II, 4)* Drug delivery systems, dose form design, physical-chemical properties of drugs, ionic equilibria, kinetics, etc. Laboratory involves dispensing and relevant information. *(Lec. 3, Lab. 4) Pre: 345, fourth-year standing.* Paruta, Lausier, and Osborne

**351 Personal Cosmetics** *(II, 3)* Formulation and manufacture of various types of personal cosmetics and toilet preparations. Examples of types studied are prepared in laboratory. *(Lec. 2, Lab. 3) Pre: 344.* Osborne and Lausier

**360 Hospital Pharmacy** *(II, 3)* Introduction to practice of pharmacy in hospitals, including both professional and administrative activities. Field trips to representative hospital pharmacies. *(Lec. 2, Lab. 3) Pre: fourth-year standing.* Staff

**371 Introduction to Clinical Pharmacy** *(II, 2)* Terminology, concepts, methodologies, and services in patient-oriented pharmacy practice. *(Lec. 2) Pre: 333, BCP 311. Co-requisite: 338 and APA 401.* Staff

**385 Pharmacy Practicum** *(I and II, 4)* Study and evaluation of non-prescription medications, health aids, and medical devices. *Pre: 345, 346; 386 to be taken concurrently.* Lausier

**386 Pharmacy Practicum Laboratory** *(I and II, 1)* Problems associated with the dispensing of medications, use of patient profiles, and effective interaction with patients and health professionals in simulated practice settings. Review of top 200 prescription drugs. *Pre: 345, 346; 385 to be taken concurrently.* Lausier

**390 Pharmacy Practice Externship** *(I and II, 6)* Structured practical experience in selected community and institutional pharmacies. Participation in patient counseling, use of patient profiles, drug distribution, inventory control, and other aspects of contemporary pharmacy practice. *(Lab. 20) Pre: fifth-year standing and permission of department.* Amore and Staff

**399 Pharmacy Externship** *(I and II, 3-12)* Structured, patient-oriented practice experience in hospital and community settings throughout New England. *(Lab. 9-36)* Amore and Staff

**425 History of Pharmacy** *(II, 3)* Historical development of pharmacy in this country and abroad emphasizing the background of recent developments in the profession and related health sciences. *(Lec. 3) Pre: fourth- or fifth-year standing.* Osborne

**451, 452 Pharmacotherapeutics I, II** *(I and II, 2 each)* Disease-state-oriented approach to therapeutics utilizing the anatomy, physiology, and pathophysiology of the disease state as it applies to treatment. *(Lec. 2) Pre: 371, 338, APA 401.* Staff

**490 Clinical Pharmacy Clerkship** *(I and II, 6)* Faculty-supervised practice of clinical pharmacy in the hospital environment. Emphasis on patient-oriented pharmacy service by direct communication with patients, physicians, nurses, and other allied health professionals involved in patient care. *(Lab. 20) Pre: fifth-year standing and permission of department.* Staff

**497, 498 Special Problems** *(I and II, 1-3 each)* Method of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. *(Lab. 3-10) Pre: permission of department.* Staff

**499 Clinical Practicum** *(II, 3-12)* Faculty supervised practical experience involving selected community and hospital pharmacies and health care delivery agencies which provide patient-oriented pharmaceutical services. *(Lab. 6-24) Pre: 451 or permission of department. Not for graduate degree program credit.* Staff

**501 Drug Information Pertaining to Institutional Pharmacy Practice** *(I, 3)*
**521, 522 Seminar** *(I and II, 1 each)*
**532 (or PCG 532) Pharmaceutical Sterile Products** *(I, 3)*
**552 Advanced Clinical Pharmacy** *(II, 3)*

## Pharmacy Administration (PAD)

*Chairperson:* Professor Campbell

**203 Social and Professional Orientation to Pharmacy** *(I and II, 2)* Introduction to social and professional consideration facing the practicing pharmacist, including matters directly related to patient care and interaction with allied health professions. *(Lec. 2) Pre: first and second year standing only.* Staff

**349 Pharmacy Administration Principles** *(I, 3)* Practical solutions to problems encountered in selection, location, and management of pharmacies, their personnel, stock, and equipment. *(Lec. 3)* Campbell

**351 Pharmaceutical Law and Ethics** *(II, 3)* Basic principles of law and ethics as applied to federal, state, and local acts, regulation and practices encountered in professional practice. Specific attention to liabilities of pharmacists in decisions; actions involving sale of medicinals, poisons, narcotics. *(Lec. 3)* Campbell and Hachadorian

**405 Personnel Administration** *(I, 3)* Principles of psychology of management and the application of these principles to the resolution of personnel administration problems in pharmacy organization. *(Lec. 3) Pre: permission of department.* Staff

**406 Pharmacy Retailing** *(II, 3)* Effect of economic trends and marketing changes on the retail distribution of pharmaceuticals and allied products, particularly as they affect the professional practice of pharmacy. *(Lec. 3) Pre: permission of department. In alternate years.* Staff

**453 Drug Marketing Principles** *(II, 2)* Modern methods of merchandising, agencies involved in marketing drug products; their functions, particularly as they affect the community pharmacy phase of professional practice. *(Lec. 2) Pre: fifth-year standing, ECN 123 or 125 or permission of department.* Campbell

**480 Prepaid Drug Plans** *(I, 3)* Institutional relationships involved in the prescribing, dispensing and prepayment of drugs. Prob-

lems of interference with pharmaceutical or medical practice arising from different types of prepayment plans. Actual experience, laws, and court decisions, abuse and controls. *(Lec. 3) Pre: 349 and 453 or equivalent.* Campbell

**497, 498 Special Problems** *(I and II, 1-3 each)* Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. *(Lab. 3-10) Pre: permission of department.* Staff

**570 Case Studies in Pharmacy Law** *(II, 3)*

## Philosophy (PHL)

*Chairperson:* Professor Wenisch

**101 Logic: The Principles of Reasoning** *(I or II, 3)* Introduction to logic, presentation of evidence in basic valid argument forms. Emphasis on effective communication by considering such topics as definitions and avoidance of fallacies. *(Lec. 3)* Staff (C)

**103 Introduction to Philosophy** *(I or II, 3)* Pursues basic questions as: What is a person? What is knowledge? Are we free? What is moral right and wrong? Does God exist? What is the meaning of death? *(Lec. 3) Not open to students who have passed or are taking 104.* Staff (L)

**104 Theories of Human Nature** *(I or II, 3)* An introduction to philosophical inquiry by examining critically some major traditional and contemporary views of human nature as expressed in a variety of religious, literary, scientific, and philosophical writings. *(Lec. 3) Not open to students who have taken or are taking 103.* Staff (L)

**111 Comparative Religion** *(I and II, 3)* Teachings of major world religions. Emphasis on Judaism, Christianity and Islam. Some comparison with Eastern religions, specifically Hinduism and Buddhism. Staff (L)

**117 Social Philosophy** *(I or II, 3)* A systematic introduction to the philosophical problems about contemporary social relations: models of community, sources of alienation, property and ownership, the meaning of work and technology, human rights and freedom. *(Lec. 3)* Johnson or Staff (L)

**125 Biblical Thought** *(I, 3)* Selected portions of the Old and New Testaments with emphasis on their positive contribution to the philosophy of the Jewish and Christian religions. *(Lec. 3)* Staff (L)

**126 The Development of Christian Thought** *(II, 3)* History of religious and philosophical ideas, development of the teachings of Christianity. Emphasis to meet needs and interests of students. Historical nature of material suitable for liberal education without regard to student's religious affiliation. *(Lec. 3)* Staff (L)

**131 Introduction to Oriental Philosophies and Religions** *(I and II, 3)* Introductory study of the main philosophical and religious ideas in the Orient, with emphasis on Hinduism, Buddhism, Confucianism, and Taoism. *(Lec. 3)* Kim (F) (L)

**227 Augustine's Confessions** *(I or II, 3)* The life and thought of Augustine as recorded in the *Confessions* with particular reference to his interpretation of religious experience. *(Lec. 3)* Young (L)

**312 Ethics** *(I or II, 3)* Examination of some major ethical theories. Systematic discussion of moral principles guiding human activities. Application of these theories and principles to issues such as abortion, euthanasia, self-defense, sexuality, and suicide. *(Lec. 3)* Schwarz or Wenisch (L)

**314 Ethical Problems in Society and Medicine** *(I or II, 3)* Ethical analysis of topics such as war, capital punishment, sexual morality, suicide, animal rights, honesty and deception, world hunger, discrimination, abortion. *(Lec. 3)* Schwarz

**318 The Philosophy of Communism** *(I or II, 3)* Essence of communism, the intellectual and ideological causes for its existence, and its implications with respect to the moral, religious, and political heritage of the West. *(Lec. 3)* Staff (L)

**319 Philosophy of History** *(I, 3)* Examination of central philosophical problems raised by the discipline of history: truth and fact in history, historical explanation and understanding, permanence and change in social time. *(Lec. 3)* Johnson or Staff (L)

**321 History of Ancient Philosophy** *(I and II, 3)* Survey of major thinkers and schools of thought in Ancient Greece, including selected pre-Socratics, Plato, and Aristotle. *(Lec. 3)* Staff (F) (L)

**322 History of Medieval Philosophy** *(I, 3)* Survey of major thinkers and schools of thought in the Middle Ages, including such thinkers as Augustine, Anselm, Aquinas, and Occam. *(Lec. 3)* Staff (F) (L)

**323 History of Modern Philosophy** *(I, 3)* Survey of major thinkers and schools in modern times, including Descartes, Locke, Berkeley, Hume, Leibnitz, Spinoza, Kant, and Hegel. *(Lec. 3)* Staff (F) (L)

**324 History of Recent Philosophy** *(II, 3)* Survey of the more important philosophical developments during the last century: realism, pragmatism, existentialism, and certain other philosophical movements. *(Lec. 3)* Staff (L)

**327 Classical Religious Thinkers** *(I or II, 3)* Intensive study of the thought of one or more religious thinkers in the tradition ranging from Philo of Alexandria to Kierkegaard. *(Lec. 3)* Young or Freeman

**328 The Philosophy of Religion** *(I and II, 3)* A systematic and critical consideration of such topics as the existence and nature of God, the problem of evil, the relation of faith to reason, religious language, miracles, and immortality. Staff (L)

**331 East Asian Thought** *(I or II, 3)* A study of the important philosophical and religious systems of China, Korea, and Japan; emphasis on Chinese traditions. *(Lec. 3)* Kim(F) (L)

**341 Introduction to Metaphysics** *(I or II, 3)* Analyzes topics such as person, mind-body, human action, freedom and determinism, causation, time, space, essence and existence, universals, and types of beings. *(Lec. 3) Pre: 3 credits in philosophy or permission of instructor.* Schwarz, Hanke, Peterson

**342 Knowledge, Belief and Truth** *(I or II, 3)* Analysis of topics such as knowledge, belief, certainty, doubt, skepticism, faith, the ethics of belief, truth, error, perception, a priori knowledge, subjectivity and objectivity, and memory. *(Lec. 3) Pre: 3 credits in philosophy or permission of instructor.* Hanke, Peterson, Schwarz

**346 Existential Problems in Human Life** *(I or II, 3)* Discussion of ultimate questions of human existence such as meaning in life, personal commitment, human relations, suffering, despair, hope, freedom, authenticity, self-deception, death, God, and immortality. *(Lec. 3)* Schwarz (L)

**352, (452) Philosophy of Science** *(I or II, 3)* Analysis of the nature and structure of scientific thought. Consideration of such issues as: structure and types of scientific explanation, verification and falsification, unity of the sciences. *(Lec. 3) Pre: 3 credits in philosophy or permission of instructor.* Kowalski

**355, (455) Philosophy of Art** *(I or II, 3)* Systematic problems arising from reflection on the creation and perception of works of art. *(Lec. 3) Pre: 3 credits in philosophy or permission of instructor.* Hanke or Staff

**401, 402 Special Problems** *(I and II, 3 each)* Course may vary from year to year, allowing one or more advanced students to pursue problems of special interest with guidance of instructor in conferences. One or more written papers. *(Lec. 3) May be repeated for credit. Pre: 3 credits in philosophy and permission of instructor.* Staff

**414 Advanced Studies in Ethics** *(I or II, 3)* Intensive studies of various issues, theories and aspects in the field of ethics. Texts of leading moralists will be carefully analyzed. Specific subject may change from year to year. *(Lec. 3) Pre: 3 credits in philosophy or permission of instructor. In alternate years.* Freeman or Staff

**440 Philosophy of Language** *(I or II, 3)* Language in its relation to the world, cognitive and non-cognitive functions of language

and philosophical issues in the area of communication. Works of Wittgenstein, the Logical Positivists, Linguistic Analysts and other contemporary thinkers. *(Lec. 3) Pre: 3 credits in philosophy or permission of instructor.* Young

**451 Symbolic Logic** *(I or II, 3)* Selected topics in modern symbolic logic including calculus of propositions, predicate calculus and modal logics. Philosophical and mathematical aspects of the subject. *(Lec. 3) Pre: 3 credits in philosophy or permission of instructor.* Kowalski

**453 Philosophy of Psychology** *(II, 3)* Examination of philosophical problems raised by contemporary psychology: predictability in a science of persons, the nature of mental and physical, the relation of theoretical understanding of persons to psychological practice. *(Lec. 3) Pre: one course in philosophy or one course in psychology or permission of the instructor.* Johnson or Staff

**502, 503, 504, 505 Tutorial in Philosophy** *(I and II, 3 each)*
**513 General Axiology** *(I or II, 3)*
**530 Philosophy of Plato** *(I or II, 3)*
**531 Philosophy of Aristotle** *(I or II, 3)*
**542 Advanced Studies in Patristic and Scholastic Philosophy** *(I or II, 3)*
**551 Philosophical Logic** *(I or II, 3)*
**555 Philosophy of the Arts and Literature** *(I or II, 3)*
**562 Advanced Studies in Empiricism and Rationalism** *(I or II, 3)*
**570 Philosophy of Immanuel Kant** *(I or II, 3)*
**580 Nineteenth-Century Philosophy** *(I or II, 3)*
**582 Advanced Studies in Contemporary Philosophy** *(I or II, 3)*

## Physical Education (PED)

*Chairperson:* Associate Professor Polidoro (Physical Education, Health and Recreation)

**105 Beginner Elective Activity I: Individual and Dual Sports** *(I and II, 1)* Beginning level of instruction for students who have little or no previous experience in the activities offered. Select appropriate letter for activity desired; e.g. 105A Beginning Archery. *(Practicum 3)* Staff

A Archery
B Badminton
C Biking & Hiking
D Bowling
E Canoeing
F Fencing
G Golf
H Gymnastics
I Sailing
J Self-Defense
K Skiing *(S/U)*
L Slimnastics
M Tennis
N Track & Field
O Judo
P Marksmanship
S Activities for Children
T Handball
W Weight Training & Conditioning
Y Modern Gymnastics
Z Paddleball

**106 Activity II: Team Sports and Group Activities** *(I and II, 1)* Beginning level of instruction for students who have had little or no previous experience in the activities offered. Select appropriate letter for activity desired. *(Practicum 3)* Staff

A Folk & Square Dance
B Modern Dance Technique
C Modern Dance Composition
D Classical Ballet
E Jazz Dance
H Basketball
I Flag Football
J Field Hockey
K Lacrosse
L Soccer
M Softball
N Volleyball
P Campcraft

The above activities may be offered in combination or as a single activity for the entire semester.

**121 Soccer and Physical Conditioning** *(I and II, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills, strategies, and officiating. *Intended for majors only. (Practicum 3)* Staff

**122 Weight Training/Softball** *(I and II, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills, strategies, and officiating. *Intended for majors only. (Practicum 3)* Piez

**123 Field Hockey/Volleyball** *(I and II, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills, strategies, and officiating. *Intended for majors only. (Practicum 3)* Crooker

**124 Flag Football/Basketball** *(I and II, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills, strategies, and officiating. *Intended for majors only. (Practicum 3)* Staff

**125 Floor Hockey/Lacrosse** *(I and II, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills, strategies, and officiating. *Intended for majors only. (Practicum 3)* Staff

**126 Wrestling/Baseball** *(I and II, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills, strategies, and officiating. *Intended for majors only. (Practicum 3)* Staff

**130 Beginning Swimming** *(I and II, 1)* Beginning level of instruction for students who have little or no previous experience. *(Practicum 3)* Staff

**205 Intermediate Elective, Activity I** *(I and II, 1)* Intermediate level of instruction for those students who have acquired the basic skills and have performing experience in the activity. All activities listed under 105. *(Practicum 3)* Staff

**206 Intermediate Elective, Activity II** *(I and II, 1)* Intermediate level of instruction for those students who have acquired the basic skills and have performing experience in the activity. All activities listed under 106. *(Practicum 3)* Staff

**221 Stunts and Tumbling** *(I and II, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills. *Intended for majors only. (Practicum 3)* Henni

**222 Basic Gymnastics** *(I and II, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills, strategies, and officiating. *Intended for majors only. (Practicum 3)* Staff

**223 Advanced Gymnastics** *(I and II, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills, strategies, and officiating. *Intended for majors only. (Practicum 3)* Staff

**230 Intermediate Swimming** *(I and II, 1)* Intermediate level of instruction of those students who have acquired the basic skills and have performing experience in swimming. *(Practicum 3)* Staff

**243 Prevention and Care of Athletic Injuries and First Aid** *(I, 3)* Conditioning, use of physiotherapy equipment, massaging, taping and bandaging technique. Latest American Red Cross procedures with the opportunity to receive standard certification. *(Lec. 2, Lab. 2) Intended for physical education majors.* Staff

**247 Athletic Officiating** *(I, 2)* Theory, practice, and techniques of officiating team sports. Particular emphasis given to football and volleyball. *(Lec. 2)* Piez

**248 Athletic Officiating** *(II, 2)* Theory, practice, and techniques of officiating team sports. Particular attention given to basketball and baseball/softball *(Lec. 2)* Piez

**251 Folk and Square Dance** *(I and II, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills. *Intended for majors only. (Practicum 3)* Mandell

**252 Dance Technique/Dance Composition** *(I and II, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills. *Intended for majors only. (Practicum 3)* Cohen

**263 Principles of Athletic Coaching** *(I, 3)* Principles of exercise physiology, leadership, and psychology applied to athletic coaching. Includes materials on administration of athletics. *(Lec. 3)* Sherman

**270 Introduction to the History and Philosophy of Physical Education** *(II, 3)* Historical development of physical education as an integral part of education and as a profession, ancient times to the present. Emphasis on development of educational philosophies within physical education and basic to current interpretations of the theory and practice of physical education. *(Lec. 3)* Nedwidek

**275 Physical Fitness Appraisal and Guidance** *(I, 3)* Principles of exercise, components of cardio-respiratory fitness, weight and tension control. Extension testing, assessment of individual interests and needs. Development of exercise program to achieve individual goals with subsequent re-evaluation. *(Lec. 2, Lab. 2)* Staff

**285 Principles of Teaching Physical Education** *(II, 2)* Principles of teaching elementary and secondary school physical education as an integral part of total education. Basic concepts for forming general principles to guide the effective planning of physical education programs. *(Lec. 2)* Crooker

**295 Physical Education in Elementary Schools** *(II, 3)* Techniques used in conducting a program of physical education for elementary school children. Types of activities found in the basic program and progressions in planning for various age groups will be stressed. *(Lec. 2, Lab. 2) Pre: 285.* O'Donnell

**306 Classical Ballet — Advanced** *(I and II, 1)* Advanced level of instruction for students who have acquired intermediate skills and have performing experience in ballet. *(Practicum 3) Pre: 106D, 206D.* Marsden

**314 Methods of Teaching Physical Education** *(I and II, 3)* Comprehensive review of the methods and materials essential in teaching physical education with emphasis on the application of interdisciplinary approaches and learning theories. *(Lec. 3) Pre: 285.* Clegg

**315 Assisting in Physical Education** *(I and II, 1)* Each student must include one unit of assisting in the department activity program (105, 106, 205, 206). Course may be repeated but in a different activity or level. *(Lab. 3) Pre: 314 or permission of department.* Clegg

**317 Field Experience** *(I and II, 1)* Students assist in one of the following: community agency, public or private schools program, summer camp or recreation program, special education program. May be repeated but with different agency. *(Lab. 3) Pre: 314 or permission of department. S/U credit.* Crooker

**321 Track and Field** *(I and II, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills, strategies, and officiating. *Intended for majors only. (Practicum 3)* Sherman

**324 Rhythmic Analysis and Accompaniment** *(II, 2)* Special emphasis on rhythmic and kinesthetic factors in movement. Use of various types of instruments for dance accompaniment with practical experience in the accompaniment of dance. *(Lec. 1, Lab. 2)* Cohen

**325 Archery/Badminton** *(I and II, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills, strategies, and officiating. *Intended for majors only. (Practicum 3)* Robinson

**326 Bowling/Tennis** *(I, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills, strategies, and officiating. *Intended for majors only. (Practicum 3)* Clegg

**327 Fencing/Golf** *(I and II, 1)* Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills, strategies, and officiating. *Intended for majors only. (Practicum 3)* Piez

**330 Life Saving** *(I or II, 1) (Practicum 3)* Staff

**331 Theory and Teaching of Dance** *(II, 2)* Methods, materials, and techniques used in teaching dance. Theory and practical experience in developing the movement vocabulary. Emphasis on teaching progression, lesson planning and dance demonstration. *(Lec. 1, Lab. 2)* Cohen

**335 Synchronized Swimming** *(I or II, 1) (Practicum 3)* Staff

**340 Water Safety Instructor** *(I or II, 1) (Practicum 3)* O'Leary

**341, 342 Techniques of Officiating** *(I and II, 3 each)* Presentation of current methods and techniques for officiating selected individual, dual, and team sports. Provides necessary training and practical experience for students to become nationally rated officials. *(Lec. 2, Lab. 2)* Piez

**343 Advanced Athletic Training** *(I and II, 3)* Specific problems relative to medical aspects of athletic training. Includes ethics of dealing with injured athletes: doctor-trainer-coach relationships; emergency examination techniques; treatment modalities and techniques; athletic nutrition. *(Lec. 2, Lab. 2) Pre: 243 or permission of department.* Staff

**344, 345 Field Experience in Athletic Training I and II** *(I and II, 3 each)* Laboratory participation under training room conditions involving specific techniques in the prevention, protection, and emergency care of athletes participating in intercollegiate and intramural athletics. Supervised field practicum 150 hours. *(Lec. 1, Lab. 10) Pre: for 344: 243 or permission of department. Pre: for 345: 343, 344 or permission of department.* Staff

**346 (or OCE 346) Skin and Scuba Diving, Beginners*** *(I or II, 2) (Lec. 1, Lab. 2)* Staff

**347 (or OCE 347) Skin and Scuba Diving, Advanced*** *(I or II, 2) (Lec. 1, Lab. 2)* Staff

**348 Diving** *(I or II, 1) (Practicum 3)* Staff

**351 Understanding Motor-development of the Elementary School Child** *(I, 3)* Associated physical factors involved in teaching skills to elementary school children. Emphasis on types and sequence of activities along with teaching and learning facts appropriate to skill level. *(Lec. 3)* O'Donnell

**352 Movement Education in Elementary Physical Education** *(II, 3)* Specialized movement in both graded and adaptive activities from kindergarten to upper elementary age. Particular attention to analysis of physical development in specific skills and space orientation. *(Lec. 3) Pre: ZOO 121 and 242, or permission of department.* O'Donnell

**354 Curriculum Designs in Elementary Physical Education** *(II, 3)* Curriculum planning for the primary, intermediate and middle school with attention to the organization and implementation of elementary physical education programs. *(Lec. 3) Pre: permission of department.* Staff

**362 Coaching of Track and Field** *(II, 2)* Theory, techniques, and practice in coaching of track and field. *(Lec. 2, Lab. 2) Pre: 263 or permission of instructor.* Sherman

**364 Coaching of Baseball** *(I, 2)* Theory, techniques, and practice in coaching baseball. *(Lec. 2, Lab. 2) Pre: 263 or permission of instructor.* Norris

**369 Tests and Measurements** *(I and II, 3)* The place of testing in the physical education curriculum. Includes analysis of data, marking systems, and overview of existing tests and measures. *(Lec. 3)* Sonstroem

**370 Kinesiology** *(I or II, 3)* Human motion based on anatomical, physiological, and mechanical principles. Emphasis on application of these principles to fundamental movements and physical education activities. *(Lec. 3) Pre: ZOO 121.* Bloomquist

**380 Organization and Administration of Physical Education** *(I and II, 3)* Techniques, methods, and systems used in organizing and administering physical education programs in public and private institutions. *(Lec. 3)* Massey

**384 Coaching of Football** *(I, 2)* Theory, techniques and practice in coaching football. *(Lec. 2, Lab. 2) Pre: 263 or permission of instructor.* Nedwidek

**386 Coaching of Basketball** *(I, 2)* Theory, techniques, and practice in coaching basketball. *(Lec. 2, Lab. 2) Pre: 263 or permission of instructor.* Staff

**391 (or HLT 391 or RCR 391) Directed Study** *(I and II, 1-3)* Independent study. Development of an approved project supervised by

*This course requires a physical examination at the student's expense administered by a physician with special expertise in this area. Please contact Health Services for reference to an approved physician prior to July 1 for enrollment in the fall semester, and November 1 for enrollment in the spring semester.

a member of the department faculty. *Pre: junior standing, permission of department and instructor.* Staff

**410 Corrective and Adapted Physical Education** *(I, 3)* Evaluation and planning of programs in physical education adapted to needs of atypical individuals. Application of anatomical and mechanical principles in detection and correction of faulty development and body mechanics. Emphasis on relationship to the medical field. *(Lec. 3) Pre: 370 or permission of department.* Bloomquist

**466 Modern Dance Choreography** *(I and II, 3)* Designed for students and teachers interested in creative dance. Theoretical and practical aspects of the art form are geared to individual abilities. Composition and choreography are major considerations. *(Lec. 2, Lab. 2) Pre: permission of instructor.* Cohen

**484 (or HLT 484 or RCR 484) Supervised Field Work** *(I and II, 6 or 12)* Supervised field work in health, physical education, or recreation in community and/or commercial agencies. *Not for teacher certification or graduate credit. Pre: permission of department.* Staff

**486 (or HLT 486 or RCR 486) Field Experience Seminar** *(I and II, 3)* Seminar for students completing field work in health, physical education, or recreation. Topics include identification of problems, resource materials, and discussions of future career concerns. *Not for graduate credit. Pre: concurrent registration in 484.*

**495 Directed Study** *(I and II, 3)* Honors thesis or equivalent project. Student determines problem and develops plan of study with faculty guidance. Project may be completed in one to two semesters, maximum three credits. *Pre: admission to the department honors program.* Staff

*Note: Student teaching includes practicum in both elementary and secondary schools under the supervision of the department staff. See EDC 485, 486, 487, 488 and 489.*

**510 Current Issues in Physical Education, Health, and Recreation** *(I or II, 3)*
**520 Curriculum Construction in Physical Education** *(I or II, 3)*
**530 Research Methods and Design in Health and Physical Education** *(I or II, 3)*
**540 Principles of Recreation Leadership** *(I or II, 3)*
**543 Outdoor Recreation and Education** *(I or II, 3)*
**550 Administration of Physical Education** *(I or II, 3)*
**560 (or HLT 560) Seminar in Health, Physical Education and Recreation** *(I or II, 3)*
**570 (or HLT 570) Major Health Problems and Curriculum Planning in Health Education** *(I or II, 3)*
**575 Perceptual-motor Education** *(I or II, 3)*
**578 Sport in American Culture** *(I or II, 3)*
**580 Physical Education for the Mentally Retarded and Learning Disabled** *(I, 3)*
**581 Psychological Aspects of Physical Activity** *(II, 3)*
**585 Adapted Physical Acitivites for Special Populations** *(I, 3)*
**591 (or HLT 591) Special Problems** *(I or II, 3)*
**595 (or HLT 595) Independent Study** *(I or II, 3)*

## Physics (PHY)

*Chairperson:* Professor Pickart

**102 Fundamental Physics** *(I or II, 3)* Fundamental principles of physics required and primarily for students of nursing. Non-mathematical qualitative course. *(Lec. 2, Lab. 2) Will not serve as a basis for advanced study in physics. Required by College of Nursing.* Stone

**109 Introduction to Physics** *(I and II, 4)* Appreciation of the physical environment and an introduction to the principles and theories of contemporary physics. *(Lec. 3, Lab. 2) Not open to students who have passed either 111, 112, 213, or 214.* Dietz and Staff

**111, 112 General Physics** *(I and II, 4 each) 111:* Mechanics, heat and sound. *112:* Optics, electricity, magnetism, and modern physics. Non-calculus presentation of fundamental physics. Suitable for prospective teachers, pre-medical and pre-dental students. *(Lec. 3, Lab. 2)* Malik and Kaufman (N)

**120 Physics and the Energy Crisis** *(II, 3)* Qualitative treatment of the physical principles and laws relating to energy. Limitations on energy conversion processes; application to current and projected energy sources. *(Lec. 3) Intended for non-science majors; not open to those who have passed 111, 112, 213, or 214.* Pickart (N)

**130 Physics and Climatic Change** *(I and II, 3)* A qualitative presentation of physical principles used to describe atmospheric climate on global and smaller scales. Examination of the physical basis for climatic change. *(Lec. 3)* Hartt (N)

**140 The Ideas of Physics** *(I and II, 3)* A non-mathematical presentation of classical and modern physics illustrated by lecture demonstrations. *(Lec. 3) Of particular interest to liberal arts students.* Dietz (N)

**213, 214 Elementary Physics** *(I and II, 3 each) 213:* Mechanics and thermodynamics. *214:* Electricity, magnetism, and wave phenomena. *(Lec. 3) For students planning to major in one of the sciences. It is recommended that MTH 142 and 243 be taken concurrently. Concurrent registration in 285, 286 is required.* Kirwan and Willis (N)

**223 Introduction to Acoustics and Optics** *(I and II, 3)* Intended primarily for students in the College of Engineering. Fundamentals of acoustical and optical phenomena, systems, and instruments. *(Lec. 3) Pre: MCE 162 and 263 to be taken concurrently.* Hartt

**285, 286 Physics Laboratory** *(I and II, 1 each)* Selected groups of laboratory exercises applying to 213 and 214. *(Lab. 2, Rec. 1) Concurrent registration in 213, 214 is required.* Staff

**322 Mechanics** *(I, 3)* Introduction to Newtonian statics and dynamics using vector analysis; particle motion, Lagrange's equations; rigid body motion. Application to various topics in physical mechanics. *(Lec. 3) Pre: 214, or 112 if accompanied by MTH 141.* Staff

**331 Electricity and Magnetism** *(II, 3)* Electrostatic fields and dielectric materials; magnetic fields, magnetic induction and magnetic materials; introduction to Maxwell's equations. *(Lec. 3) Pre: 214, or 112 if accompanied by MTH 141.* Staff

**334 (or AST 334) Optics** *(II, 3)* Geometrical and physical optics; thick lens optics, interference, diffraction, polarization. *(Lec. 3) Pre: 112 or 214.* Stone

**341 Introductory Modern Physics** *(I and II, 3)* The development and current status of major advances in twentieth century physics, such as special relativity, kinetic theory, structure of atoms, molecules and nuclei, wave and particle properties of matter, thermionic and photoelectric effects. *(Lec. 3) Pre: 214 or 223.* Staff

**381, 382 Advanced Laboratory Physics** *(I and II, 3 each)* Experiments in electrical measurements and electronics. *381:* Classical experiments such as the Millikan Oil Drop and the measurement of e/m. Introduction to careful handling and reduction of data. Special attention to precision of measurements and accuracy of results obtained. *382:* Fundamentals of semiconductor devices. Attention to basic electronic circuits, including amplifiers, integrated circuits, and non-linear devices associated with digital electronics. *(Lec. 1, Lab. 6) Pre: 112 or 214.* Nunes and Cuomo

**401, 402 Seminar in Physics** *(I and II, 1 each)* Preparation and presentation of papers on selected topics in physics. *(Lec. 1) Required of all graduate students in physics; one semester required for all senior physics majors.* Staff

**406 (or AST 406 or MCE 406) Atmospheric Physics I** *(I, 3)* Thermodynamics of physical processes in the atmosphere, including radiation and energy transfer; hydrostatics and the vertical structure of the atmosphere; global climate modeling and other physical applications. *Pre: 214 or equivalent and MTH 244 or permission of department.* Hartt, Penhallow

**407 (or AST 407 or MCE 407) Atmospheric Physics II** *(II, 3)* Continuation of 406. Dynamics and kinematics of atmospheric motion; vorticity, circulation, wave motion; numerical weather prediction; modeling the general circulation and climatic change; other physical applications. *Pre: 406 or permission of department.* Hartt, Penhallow

**420 Introduction to Thermodynamics and Statistical Mechanics** *(II, 3)* Emphasis on laws of thermodynamics and properties of thermodynamic systems, kinetic theory of gases, molecular velocity distributions, transport phenomena, Maxwell-Boltzmann statistics. *(Lec. 3) Pre: 112 or 214, MTH 141 and 142.* Northby

**425 Acoustics** *(I, 3)* Mathematical theory of vibrating systems; harmonic wave motion. Topics include: transmission and absorption of sound waves, microphones, psychoacoustics, underwater acoustics, and ultrasonics. *(Lec. 3) Pre: permission of department.* Cuomo

**451 Atomic and Nuclear Physics** *(I, 3)* Special relativity, black body radiation, photo effect, electron waves, Compton scattering, X-rays, atomic and nuclear magnetism, angular momentum, and introductory Schrodinger wave mechanics. *(Lec. 3) Pre: differential and integral calculus and 341, or permission of department.* Staff

**452 Nuclear Physics** *(II, 3)* Nuclear stability and binding energies, semi-empirical mass formula, radioactive decay, nuclear two-body problem including ground state of the deuteron and neutron-proton scattering, methods of acceleration and detection of nuclear particles, theory of the compound nucleus and low energy nuclear reactions with emphasis on the interaction of neutrons with nuclei, liquid drop model of nuclear fission, chain reactors, survey of high energy nuclear physics, and meson theory of nuclear forces. *(Lec. 3) Pre: 451 or permission of instructor.* Staff

**455 Introduction to Solid State Physics** *(I, 3)* Structural properties of crystal lattices; thermal, electrical, and magnetic properties of solids; free electron theory of metals, band theory of solids, semi-conductors, imperfections in crystals. *(Lec. 3) Pre: permission of department.* Staff

**483, 484 (or AST 484) Laboratory and Research Problems in Physics** *(I and II, 3 each)* Research in current areas of physics. First semester: experiments drawn from various fields such as spectroscopy, optics, nuclear physics, acoustics, etc., and familiarization with research programs in the department. Second semester: research project, with individual faculty member, related to an active research project. *(Lec. 1, Lab. 6) Pre: 381, 382.* Staff

**491, 492 (or AST 491, 492) Special Problems** *(I and II, 1-6 each)* Advanced work under the supervision of a member of the staff and arranged to suit the individual requirements of the student. *(Lec. or Lab. according to nature of problem) Credit not to exceed a total of 12. Pre: permission of department.* Staff

**510, 511 Mathematical Methods of Physics** *(I and II, 3 each)*
**520 Classical Dynamical Theory I** *(I, 3)*
**525 Statistical Physics** *(I, 3)*
**530 Electromagnetic Theory I** *(II, 3)*
**531 Electromagnetic Theory II** *(I, 3)*
**550 Physical Acoustics** *(I, 3)*
**560 Introduction to Neutron Physics** *(I, 3)*
**565 Introduction to Liquid State Physics** *(II, 3)*
**570 Quantum Mechanics I** *(II, 3)*
**571 Quantum Mechanics II** *(I, 3)*
**585 Acoustic Measurements** *(II, 2)*
**590, 591 Special Problems** *(I and II, 1-6 each)*

## Plant Pathology-Entomology (PLP)

*Chairperson:* Professor Traxler

**200 Introduction to Plant Protection** *(I, 3)* Basic study of weeds, insects, and disease agents, and the problems they cause. Recognition of important plant pests and application of integrated cultural, chemical, and biological pest management procedures. *(Lec. 3) Pre: BIO 101 or BOT 111.* Englander

**332 Plant Pathology: Introduction to Plant Diseases**
See Botany 332.

**371 Insects of Turfgrasses, Trees and Ornamental Shrubs** *(I, 3)* Identity, injury, life cycle, and methods of control of the principal insects attacking these groups of plants. *(Lec. 2, Lab. 2) In alternate years, next offered 1982-83.* Kerr

**377 Biological Aspects of Water Quality** *(I, 2)* Basic concepts of water quality and use. Lectures, discussions, case histories of the causes of pollution. Methodology for qualitative and quantitative determination and toxicity bioassay. Water quality requirements, monitoring, abatement. *(Lec. 2, Lab. TBA) Pre: permission of instructor.* Staff

**381 (or ZOO 381) Introductory Entomology** *(I, 3)* Introduction to the diverse components of entomology emphasizing basic principles of insect morphology, physiology, behavior, and ecology. Current topics in insect evolution and management strategies. *(Lec. 3) Pre: BOT 111 or BIO 101 and ZOO 111 or BIO 102, or equivalent. Concurrent registration in 382 required for B.S. zoology concentration credit.* LeBrun

**382 (or ZOO 382) Introductory Entomology Lab.** *(I, 1)* Insect structure, function and systematics with field studies in the ecology, survey, and collection of insects in their natural environment. *(Lab. 3) Pre: 381 or concurrent registration in 381.* LeBrun

**391, 392 Special Projects** *(I and II, 1-3 each)* Special work to meet individual needs of students in various fields of plant pathology and entomology, nematology, virology, agricultural or industrial mycology, biological aspects of water quality, biodegradation, and related subjects. *(Lec. and/or Lab. according to nature of the project) Pre: permission of department.* Staff

**393, 394 Plant Protection Clinic** *(I and II, 3 each)* Practical experience in plant pest detection and identification, pest management techniques and equipment. *(Lec. 1, Lab. 4) Pre: 381 or 401, 332 or 442 and permission of instructor.* Wallace

**401 Applied Insect Ecology** *(II, 3)* Principles of ecology combined with practical aspects of pest recognition and control. Lecture: development of pest management systems. Lab: emphasis on insects of importance to ornamentals, gardens, and households. *(Lec. 1, Rec. 1, Lab. 2) Pre: 381 or ZOO 381 or permission of instructor.* Casagrande

**422 (or MIC 422) Industrial Microbiology** *(II, 3)* Application of microbial systems to industrial operations. Culture handling, fermentation systems, equipment, products and the legal and economic aspects of the processes. Laboratory exercises demonstrate fundamental types of operations. *(Lec. 2, Lab. 3) Pre: MIC 401 and BCP 311.* Traxler

**442 Diseases of Turfgrasses, Trees, Shrubs and Ornamental Shrubs** *(I, 3)* Disease diagnosis, epidemiology, and control measures pertinent to these categories of plants. *(Lec. 3) Pre: BOT 332 or equivalent or permission of instructor.* Jackson

**443 Plant Disease Laboratory** *(I, 1)* Laboratory and field diagnosis of turf diseases and diseases of trees and ornamental shrubs. *(Lab. 2) Must be taken concurrently with 442.* Jackson

**465 Etiology of Plant Disease** *(I, 3)* Identification and classification of the agents causing plant disease, and a study of the activities of these causal agents that lead to disease development. *(Lec. 3) Pre: BOT or PLP 332.* Muller and Englander

**482 Nematology** *(II, 3)* Morphology, taxonomy, bionomics, and physiology of plant parasitic, soil, and aquatic nematodes.
Emphasis on host-parasite relationships, laboratory techniques, and principles of control. *(Lec. 2, Lab. 2) Pre: ZOO 111, BOT 332. In alternate years, next offered 1982-83.* Englander

**511 The Nature of Plant Disease** *(I, 3)*
**561 Plant Virology** *(I, 3)*
**571 Plants, Insects and Pathogens** *(II, 3)*
**591, 592 Research Problems** *(I and II, 1-3 each)*

*Note: For other related courses see BOT 332, 432, 536, 540, and ZOO 381, 482, 581, 586.*

## Plant Science (PLS)

*Chairperson:* Professor McGuire (Plant and Soil Science)

**101 Home Grounds** *(I and II, 3)* Principles and practices in the culture and maintenance of flowers, lawns, shrubs, trees, fruits, and vegetables, including plant propagation and labor-saving suggestions for the home property. *(Lec. 3)* Wilson

**204 Plants, Man, and the Environment** *(II, 3)* Plants in their economic, esthetic, and survival relationship to man and other animals. Basic information on the ecology, production, improvement, distribution, and use of economic plants. *(Lec. 3)* Gough

**205 Plants, Man, and the Environment Practicum** *(II, 1)* Practical aspects of the culture ecology, improvement, and use of plants in the environment of man. *(Lab. 2) Pre: concurrent registration in 204 or permission of instructor.* Gough

**233 Floral Art** *(I and II, 3)* Theory and practice in the art of flower and plant arrangement for the home, show, and special occasions. History, elements and principles of design and color. *(Lec. 1, Studio 4)* Larmie (A)

**242 Appreciation of Landscape Design** *(I and II, 3)* Introduction to theory and principles of landscape design as applied to the home. Property selection and climate control. Modern methods of property planning including the individual components of the completed landscape plan. *(Lec. 3)* Hindle and Wilson

**306 Nursery Principles and Practice** *(I, 3)* Principles of woody plant production with emphasis on cultural practices. Growing, pruning, transplanting; including methods of digging, grading, storing, and marketing of plants. *Pre: 204, BOT 245. (Lec. 2, Lab. 2)* McGuire

**311 Fruit Science** *(I, 3)* Principles of fruit production with emphasis on home gardens. Topics include propagation, planting, soils, fertilization, cultural practices, pruning, and storage of tree and small fruits and dwarf or semidwarf stocks. *(Lec. 3) Pre: 204.* Gough

**324 Vegetable Science** *(II, 3)* Origin, culture, cultivars, fertility management, harvest, preservation, and quality of vegetables for home gardens and small roadside stand operations. *(Lec. 2, Lab. 2) Pre: 204.* Pearson

**331 Floriculture and Greenhouse Management** *(I, 3)* The greenhouse environment and its relation to the culture of specific plants. Principles governing the production and culture of plants under controlled temperature, humidity, light, and modified atmospheres. Greenhouse construction and environmental control. *(Lec. 3) Pre: 204.* Shaw

**335 Commercial Floral Design and Flower Shop Practices** *(I, 3)* Advanced floral design including wedding, funeral, church, and holiday arrangements. Flower shop practices, buying, selling, and handling cut flowers and potted plants. *(Lec. 1, Studio 4) Pre: 233 or permission of instructor.* Larmie

**341 Lawn Management** *(I, 3)* Fundamental aspects of turfgrass science including identification, propagation, fertilization, pest control, and other soil-plant relationships. *(Lec. 2, Lab. 2) Pre: 204, 212.* Duff

**343 Techniques in Landscape Design** *(I, 3)* Landscape concepts in graphic form. Emphasis on drawing landscape plans for residential property, arrangement of unit areas, ornamental plants suitable for specific landscape situations. *(Lec. 1, Studio 4) Pre: 204, 242.* Dunnington

**352 Herbaceous Plants** *(II, 3)* Identification, growth characteristics, culture and use of annuals, biennials, and perennials for foliage and flowers in gardens and as house plants. *(Lec. 2, Lab. 2)* Shaw

**353 Fundamentals of Ornamental Plant Classification** *(I, 3)* Identification and description under fall conditions; classification and adaptation of the important trees and shrubs including broadleaf evergreens and their value in ornamental plantings. *(Lec. 1, Lab. 4) Pre: BIO 101 or BOT 111.* Hindle

**382 World Crops** *(II, 3)* Classification, origin, and uses of crop plants. Influence of climate, soils, and cultural factors on the production of crops used by man. Ecological distribution of important world crops. *(Lec. 3) Pre: 204 or BOT 111 or BIO 101.* Wakefield

**401, 402 (or SLS 401, 402) Plant and Soil Science Seminar** *(I and II, 1 each)* Presentation and discussion of current topics of concern to producers and consumers of plants and plant products including soil-plant relationships. *(Lec. 1) Pre: senior standing.* Staff

**405 Propagation of Plant Materials** *(II, 3)* Theoretical and practical study of propagation including grafting, budding, cuttage, and seedage. *(Lec. 2, Lab. 2) Pre: 204, BOT 245.* McGuire

**413 Plant Cell and Tissue Culture** *(I, 2)* Current plant cell, tissue, and organ culture technology; growth, differentiation, somatic hybridization and embryogenesis, and genetic manipulation of plant cells. *(Lec. 2) Pre: BOT 245.* Krul

**420 Crop Ecology** *(I, 3)* Environmental factors affecting growth of crop plants. Influence of management, climate, and soil factors on energy relationships, interplant competition, crop adaptation, persistence, and productivity. Student project required. *(Lec. 3) Pre: 204, BIO 101 or BOT 111.* Wakefield

**435 (434) Greenhouse Crop Production and Postharvest Handling** *(I, 3)* Commercial production of greenhouse crops and post harvest physiology of flowers. Student project required. *(Lec. 2, Lab. 2) Pre: 331.* Shaw

**436 (433) Floriculture and Greenhouse Crop Production** *(II, 3)* Status of floriculture industry and commercial production of greenhouse crops including scheduling and marketing. Student project required. *(Lec. 2, Lab. 2) Pre: 331.* Larmie

**442 Professional Turfgrass Management** *(II, 3)* Establishment and maintenance practices for specialty turfgrass areas such as golf courses, lawn tennis courts, bowling greens, athletic fields, public parks, industrial and institutional grounds, airports and roadsides. Design and construction specifications, and construction and maintenance budgets. *(Lec. 3) Pre: 341 or equivalent.* Duff

**444 Environmental Aspects of Landscape Design** *(II, 3)* Relationships between principles of landscape design and elements of the environment that contribute to development of ecologically based plans. Client conferences and specifications for woody ornamental plants. *(Lec. 1, Studio 4) Pre: 343 and 353 or permission of instructor.* Dunnington

**446 Landscape Construction** *(II, 3)* The study of soil adjustment; grading, cut and fill, reshaping of earth surfaces. A comprehensive survey of construction materials; asphalt, concrete, wood and masonry products and their uses in landscape construction. *(Lec. 2, Studio 2) Pre: 343 or permission of instructor.* Dunnington

**454 Identification of Basic Ornamental Plants** *(II, 3)* Identification and description under winter and spring conditions, classification and adaptation of the coniferous evergreens, vines, and ground covers and their value in ornamental plantings. *(Lec. 1, Lab. 4) Pre: BIO 101 or BOT 111.* Hindle

**461 Weed Science** *(II, 3)* Ecological and cultural aspects of weed problems, physiology of herbicide action, selected problem areas in weed control and plant identification. *(Lec. 2, Lab. 2) Pre: 212, BOT 245, organic chemistry desirable.* Hull

**472 Plant Improvement** *(II, 3)* Breeding of economic crops with major emphasis on vegetables, ornamentals, flowers, turfgrasses. Objectives and techniques of selection, pure line, hybridization breeding; quantitative variability; seed production; application of genetic principles to breeding problems. *(Lec. 2, Lab. 2) Pre: ASC 352 or BOT 352. In alternate years, next offered 1982-83.* Staff

**475 Plant Nutrition and Soil Fertility** *(II, 4)* The plant-soil system. Availability and mobility of mineral nutrients in soil and their uptake, distribution and function in plants. Plant energy relations and organic nutrition. Laboratory: hydroponic plant culture, ion interaction, radioisotopes, and deficiency symptoms. *(Lec. 3, Lab. 2) Pre: 212, BOT 111, 245 and organic chemistry.* Hull

**491, 492 Special Projects and Independent Study** *(I and II, 1-3 each)* Soils, plant nutrition, propagation, growth and development and garden design and site planning. Laboratory, library, studio, greenhouse, storage, and field facilities. *(Lab. 3-9) Pre: permission of department.* Staff

**501 to 504 (or SLS 501 to 504) Graduate Seminar in Plant and Soil Science** *(I and II, 1 each)*

**511 Plant Growth Regulators** *(II, 3)*

**512 Plant Growth and Development** *(II, 3)*

**513 Laboratory Plant Tissue Culture** *(II, 1)*

**576 Physiology of Plant Productivity** *(I, 3)*

**591, 592 (or SLS 591, 592) Non-Thesis Research in Plant and Soil Science** *(I and II, 1-3 each)*

## Political Science (PSC)

*Chairperson:* Associate Professor Killilea

**113 American Politics** *(I and II, 3)* Basic principles of the government of the United States: constitutionalism, separation of powers, federalism, civil liberties; politics; legislative, executive, and judicial organization; functions of government. *(Lec. 3)* Warren and Staff (S)

**116 International Politics** *(II, 3)* Nature of the state system, foundations of national power, means of exercising power in the interaction of states. Current international problems. *(Lec. 3)* Warren and Staff (S)

**201 Introduction to Comparative Politics** *(I, 3)* Trends in comparison of government systems, and of indices for political development. Illustrations and comparisons from the American, European, and developing nations. *(Lec. 3)* Milburn (S)

**221 State and Local Government** *(I, 3)* Survey of institutional framework of American state and local governments. Consideration of current events and controversies at state and local level. *(Lec. 3) Pre: 113.* Leduc (S)

**288 The American Legal System** *(II, 3)* Political and social analysis of the American legal system, particularly at trial court and street levels, and roles of participants in that system, with observation of local courts. *(Lec. 3) Pre: 113.* Rothstein (S)

**304 Introduction to Public Administration** *(II, 3)* An overview of the field of public administration. Consideration will be given to the relationship of public organizations with society. Examination of major administrative theories and their influence upon contemporary organizational environment. *(Lec. 3) Pre: permission of instructor.* Murphy

**321 Politics and Problems of Israel** *(II, 3)* Analysis of the evolution of political institutions and the dynamics of public policy in Israel. Emphasis on contemporary political problems. *(Lec. 3) Pre: 113 or 116 or permission of instructor.* Zucker

**341 Political Theory, Plato to Machiavelli** *(I, 3)* Major political philosophies from Plato to Machiavelli and their influence on such key concepts as justice, equality, and political obligation. *(Lec. 3)* Killilea (L)

**342 Political Theory, Modern and Contemporary** *(II, 3)* Continuation of 341; Machiavelli to Marx and Freud. *(Lec. 3)* Killilea (L)

**343 Revolutionary Thought** *(II, 3)* Analysis of revolutionary thought from Jewish millennarianism to Latin American and Asian communism. *(Lec. 3) Pre: 113.* Rothstein

**365 Political Parties and Practical Politics** *(I, 3)* Analysis of the American party process with some attention to comparative party systems. History, organization, functions, methods, problems, and prospects for reform. *(Lec. 3) Pre: 113.* Zucker

**368 Public Opinion** *(I, 3)* Examination of public opinion and formative influences upon it. Role and implications of public opinion in governmental process. *(Lec. 3) Pre: 113.* Leduc, Tyler

**369 Legislative Process and Public Policy** *(II, 3)* Analysis of American legislative bodies, particularly Congress, some attention to comparative legislatures. Structure, organization, functions of Congress analyzed in relation to its role in determining public policy. *(Lec. 3) Pre: 113.* Zucker

**375, 376 Field Experience in Practical Politics** *(I, II, 1-3 each)* Supervised experience in local, state, and national units of government, political organizations, private, and public community agencies. Students must have placement description, faculty supervisor and outline of academic component of experience prior to registration. *S/U credit. 1-3 credits per semester; maximum of 6 credits. Pre: 12 credits in the social sciences including six credits in political science; permission of instructor.* Staff

**401 Comparative European Politics** *(I and II, 3)* Concepts and methodologies relative to the study of comparative politics. Structural-functional approach to survey of the formal and informal features of the political systems of Great Britain, France, Germany, U.S.S.R., one other country. *(Lec. 3)* Milburn

**407 The Soviet Union: Politics and Society** *(II, 3)* Politics and society of the Soviet system including the role of the Communist party, economic planning, ethnic minorities, the intelligentsia, the "new Soviet man." *(Lec. 3) Pre: 116 or Russian history course recommended. In alternate years, next offered 1981-82.* Staff (F)

**408 African Governments and Politics** *(I, 3)* Political developments in the new nations of sub-Saharan Africa. Main stress is functional: role of parties as integrative forces, democratic centralism, one party states, African political thought and common developmental problems. *(Lec. 3) Pre: 113 and 116.* Milburn (F)

**420 Dissent, Non-Violence and Change** *(I, 3)* Political dissent focusing on philosophies and life experiences of those who, without recourse to violence, work for fundamental changes within their societies and internationally. *(Lec. 3) Pre: 113 or 116.* Stein

**422 Comparative American State Politics** *(II, 3)* Comparative study of American state politics and government, focusing on public policy formation and execution. Emphasis on contemporary issues. *(Lec. 3) Pre: 221, EST 408 or their equivalent or permission of instructor.* Wirth and Leduc

**431 International Relations** *(I, 3)* Analysis of the various theories of international relations and study of the major forces and events shaping the politics of the Great Powers. *(Lec. 3) Pre: 116.* Warren

**432 International Government** *(II, 3)* General development of international government, with particular attention to structure, methods, and operations of the League of Nations, the United Nations, and related agencies. Problems of security, conflict resolution, and social and economic issues. *(Lec. 3) Pre: 116.* Warren

**434 American Foreign Policy** *(II, 3)* Analysis of the institutions, techniques and instruments of policymaking and the execution of foreign policy. *(Lec. 3) Pre: 116.* Staff

**443 Twentieth-Century Political Theory** *(I, 3)* Important political theorists of this century, particularly as they interpret the basis of political obligation and weigh the question of violent political change. *(Lec. 3) Pre: permission of department.* Killilea

**444 Marxist Political Thought** *(II, 3)* A systematic analysis of the political thought of Marx, Engels, Lenin, later Marxists and revisionists emphasizing the state, revolution, political economy, and social structure. *(Lec. 3) Pre: 342, 343, 443, PHL 117, 318 or permission of instructor. In alternate years.* Rothstein

**455, 456 Directed Study or Research** *(I and II, 3 each)* Special work arranged to meet the needs of individual students who desire advanced work in political science. *(Lec. 3) Pre: permission of department.* Staff

**460 Urban Politics** *(I and II, 3)* Contemporary urban politics and policy formation. Political behavior, decision making, and administration examined in relationship to the crisis of the cities, the changing metropolis, and the growth of the megalopolis. *(Lec. 3)* Pre: 113. Wood and Zucker

**461 The American Presidency** *(I, 3)* Presidential leadership and decision making, with emphasis on growth in power and prestige of the presidency, exercise of presidential influence in conduct of government, and presidential initiative in formulating and developing national policies and priorities. *(Lec. 3) Pre: 113.* Wood

**464 International Law** *(II, 3)* Fundamental aspects of international law: sources, treaties, international courts, recognition, territoriality, law of the sea, and conflict resolution. Case studies of international law in political decision making. *(Lec. 3) Pre: 116.* Gamble

**466 Urban Problems** *(II, 3)* Contemporary and emerging problems of urban affairs. Discussion, reading, and assignments on the interaction among urban change, development of social institutions, and formation of public policy. *(Lec. 3) Pre: 113.* Wood and Zucker

**470 Problems and Principles in the American Political Process** *(II, 3)* Theories and problems of contemporary politics with emphasis on power and policy formulation in the American political process. *(Lec. 3) Pre: 113, 116.* Zucker

**471 Constitutional Law** *(I, 3)* the Supreme Court as a political institution in American democracy. Analysis of leading constitutional decisions exploring: adaptation of governmental powers to changed conditions of society, development and function of judicial review, and dynamics of decision making in the Supreme Court. *(Lec. 3) Pre: 113.* Wood

**472 Civil Liberties** *(II, 3)* The problem of human freedom examined in the context of the fundamental rights guaranteed to individuals by the American constitution. Emphasis on religious liberty, freedom of expression, racial equality, fair criminal procedures, and the protection of personality and privacy. *(Lec. 3) Pre: 113.* Wood

**474 Criminal Justice System** *(II, 3)* The American system of criminal justice, general processing of cases, principal actors, study of theories of criminal law, and pretrial detention and sentencing. *(Lec. 3) Pre: 113.* Rothstein

**481, 482 Political Science Seminar** *(I and II, 3 each)* Intensive studies in various important fields in political science. Class discussion of assigned readings and student reports. Emphasis on independent research. *(Lec. 3) Pre: 6 credits in political science beyond 113, 116.* Staff

**483 Political Process: Policy Formulation and Execution** *(I or II, 3)* Interrelationships of policy development and administration with particular attention devoted to participants in the process. Specific activities of the executive branch and government policies that affect the structure, composition, and function of the bureaucracy. *(Lec. 3) Pre: permission of instructor.* Staff

**486 Intentional Communities** *(II, 3)* Concepts and forms of community emerging in response to changes in political and socioeconomic conditions and consciousness. Emphasis on smaller units, e.g., intentional communities, cooperatives and communes, voluntary associations. *(Lec. 3) Pre: 113, 116 and one 300-level political science course.* Stein

**491 Principles of Public Administration** *(I, 3)* Principles of public administration, structure and organization, financial management, administrative responsibility and the relation between the administration and other branches of government. *(Lec. 3) Pre: 113.* Staff

**495 Comparative Urban Politics** *(I, 3)* Analysis of urban processes and policy formation affecting urbanization in the United States, Europe and selected developing nations. *(Lec. 3) Pre: 113 or 116 or permission of department.* Milburn

**498 Public Administration and Policy Formulation** *(II, 3)* Indentification and analysis of factors which affect formulation of public policy, including roles of the executive, the bureaucracy, the legislature, and special interest groups. Evolution of the policy process, particularly at the state and local levels of government. *(Lec. 3) Pre: 491 or permission of department.* Staff

**501 Administrative Theory** *(I and II, 3)*
**502 Techniques of Public Management** *(I and II, 3)*
**503 Problems in Public Personnel Administration** *(I or II, 3)*
**505 (or SOC 505) Public Program Evaluation** *(I and II, 3)*
**506 Seminar in Budgetary Politics** *(I, 3)*
**507 The U.S.S.R. and China in World Affairs** *(I, 3)*
**510 Developing Nation-State: Africa** *(II, 3)*
**512 Seminar in Marine Science Policy and Public Law** *(II, 3)*
**522 Comparative American Local Politics** *(I, 3)*
**523 Seminar in Comparative Public Administration** *(I, 3)*
**524 Seminar in Public Policy Problems** *(I and II, 3)*
**544 Democracy and Its Critics** *(I, 3)*
**555, 556 Directed Study or Research** *(I and II, 3 each)*
**568 Jurisprudence** *(II, 3)*
**573 Administrative Law** *(I, 3)*
**577 (or GMA 577) International Ocean Law** *(I, 3)*

**590 Internship in Public Administration** *(I and II, 3-6)*
**595 Problems of Modernization in Developing Nations** *(II, 3)*

## Portuguese (POR)

*Section Head:* Associate Professor McNab

**101 Beginning Portuguese I** *(I and II, 3)* Fundamentals of modern European Portuguese. Emphasis on standard pronunciation, development of familiarity with most common grammar structures, and acquisition of working vocabulary. *(Lec. 3)* Staff (F)

**102 Beginning Portuguese II** *(I and II, 3)* Continuation of 101 *(Lec. 3) Pre: 101, equivalent, or permission of instructor.* Staff (F)

**103 Intermediate Portuguese I** *(I and II, 3)* Intensive and extensive reading of moderately difficult Portuguese prose, review of grammar structures, idiomatic expressions, conversation practice based on readings. *(Lec. 3) Pre: 102, equivalent, or permission of instructor.* Staff (F)

**104 Intermediate Portuguese II** *(I and II, 3)* Continuation of 103. Readings of more difficult texts. Class discussion and reports on supplementary readings. *(Lec. 3) Pre: 103, equivalent, or permission of instructor.* Staff (F)

**205, 206 Advanced Portuguese** *(I and II, 3 each)* Practice in speaking and writing standard Portuguese. Understanding varieties of Portuguese. Materials of cultural, intellectual and professional interest. *(Lec. 3) Pre: 104, equivalent, or permission of instructor.* Staff

**311, 312 Topics in the Civilization of the Portuguese-Speaking World** *(I and II, 3 each)* Selected topics in the relationship between geographical, historical, social and political factors and cultural, artistic and intellectual development in the Portuguese-speaking areas of the world. *(Lec. 3) Pre: 206, equivalent, or permission of instructor. May be taken concurrently with 205 or 206 by permission of instructor. May be repeated for credit as often as topic changes.* Staff

**335, 336 Topics in the Literature of the Portuguese-Speaking World** *(I and II, 3 each)* Selected topics in the literatures of continental Portugal and the adjacent islands, Brazil, Cape Verde, Angola, Mozambique. *(Lec. 3) Pre: 206, equivalent or permission of instructor. May be taken concurrently with 205 or 206 by permission of instructor. May be repeated for credit as often as the topic changes.* Staff

**497, 498 Directed Study** *(I and II, 3 each)* For the advanced student. Individual study and reports on problems of special interest. *(Lec. 3) Pre: one 300-level course in Portuguese; acceptance of a project by a member of the staff and departmental approval. Not for graduate degree program credit.* Staff

## Psychology (PSY)

*Chairperson:* Professor A. Lott

**103 Towards Self-Understanding** *(I and II, 3)* Individual and social problems of normal persons. Personality development, social behavior, and adjustive reactions with emphasis on increasing awareness of personal and interpersonal functioning. *(Lec. 3)* Grebstein, Prochaska, and Staff (S)

**113 General Psychology** *(I and II, 3)* Introductory survey course of the major facts and principles of human behavior. Prerequisite for students interested in professional work in psychology or academic fields in which an extended knowledge of psychology is basic. *(Lec. 2, Rec. 1)* Staff (S)

**232 Developmental Psychology** *(I and II, 3)* Comprehensive understanding of human development and growth from birth to senescence. *(Lec. 2, Rec. 1) Pre: 113, sophomore standing.* French, Gross, Kulberg, Tyne (S)

**235 Theories of Personality** *(I and II, 3)* Critical survey of the major theories of personality. Emphasis will be placed mainly upon the "normal" personality. *(Lec. 3) Pre: 113, sophomore standing.* Berman, Stevenson, and Staff (S)

**254 Behavior Problems and Personality Disorders** *(I and II, 3)* Evaluation of the more serious behavioral disorders as found in the major forms of character disorders, psychoneuroses, and psychoses. Theories of causation, development and effects of anxiety and defense mechanisms, and interpretation of symptoms and methods of treatment. *(Lec. 3) Pre: 113, sophomore standing.* Berger and Staff (S)

**300 Quantitative Methods in Psychology I** *(I and II, 3)* Basic concepts and techniques of quantification in psychology. Emphasis on application of certain statistical tools in the analysis of pychological measurements of behavior. *(Lec. 3) Pre: 113, at least one course in mathematics at the college level, and sophomore standing.* Merenda, Velicer, and Staff

**301 Introduction to Experimental Psychology** *(I and II, 3)* Lectures, demonstrations, and laboratory experiments introduce the student to fundamental principles of experimental techniques applied in psychological research. *(Lec. 2, Lab. 2) Pre: 300.* Smith and Staff

**305 Field Experience in Psychology** *(I and II, 3)* Direct contact with settings and populations served by psychologists. Emphasis on understanding models and theories in relation to practical problems. Topical sections may include: (a) pre-clinical, (b) community, (c) laboratory, and (d) organizational applications. *(Lec. 1, Lab. 4) may be repeated once. Pre: 113 and permission of instructor.* Stevenson, Hurley, Berger, and Staff

**310 History and Systems of Psychology** *(I or II, 3)* Rise and development of psychological research, psychological systems, and specialized areas within psychology. *(Lec. 3) Pre: 301, PHL 103 recommended.* Silverstein

**334 Introduction to Clinical Psychology** *(I, 3)* Emphasis on scope of the field, functions of the clinical psychologist, methods used, and problems encountered, both scientific and professional. *(Lec. 2, Lab. 2) Pre: 254, junior standing, and permission of department.* Staff

**361 Learning** *(II, 3)* Learning process in humans and subhumans, including principles, methods, and data. Operant learning and behavior modification. *Pre: 301 or permission of instructor.* N. Smith

**371 Laboratory in Learning** *(II, 1)* Laboratory experiments in learning (primarily animal) designed to parallel course materials in 361. *(Lab. 2) Pre: 301, 361 (usually taken concurrently) or permission of instructor.* Smith and Staff

**381 Physiological Psychology** *(I, 3)* Physiological mechanisms operative in human behavior. Sensory, neural, endocrine, and response systems as related to sensation, perception, attention, emotions, motivations, and learning. *(Lec. 3) Pre: junior standing.* Valentino

**382 Research Methods in Physiological Psychology** *(II, 3)* A thorough introduction to the principles and techniques of experimentation in physiological psychology, including brain stimulation and lesions, electrophysiology, and pharmacology. *(Lec. 3) Pre: permission of instructor and 381 (may be taken concurrently).* Valentino

**385 Psychology of Perception** *(I or II, 3)* Sensory function, development of perception, perception of space, color, sound, and complex events. *(Lec. 3) Pre: 113 and junior standing.* Collyer

**391 Theories of Learning** *(I or II, 3)* Psychological theories developed for explanation of experimental data in the area of learning, including evaluation of learning theories, their basic concepts, and analysis of various behaviors in terms of the theoretical frameworks. *(Lec. 3) Pre: 301 and junior standing.* Silverstein

**397 Honors Seminar** *(I, 3)* Optional seminar for honors candidates focusing on helping the student to develop an honors project. Discussion of various research possibilities with emphasis on alternative modes of in-

quiry. *(Lec. 3) Pre: senior majors, permission of department, 3.3 overall G.P.A., 3.25 psychology G.P.A. Registration for two semesters of Honors Colloquium.* Staff

**398 Honors Project** *(II, 3)* Independent project culminating in an honors thesis. Faculty guidance in delineating a problem within the major area surveyed in the honors seminar the preceding semester. *(Lec. or Lab. 3-6) Pre: permission of instructor. 3.3 overall G.P.A., 3.25 psychology G.P.A. Registration for two semesters of Honors Colloquium.* Staff

**432 Advanced Developmental Psychology** *(II, 3)* Major issues in developmental psychology. Emphasis on research in Piaget, Erikson, Bruner, Kagan, and Moss. Includes effects of infant care, sex typing, parental discipline, and developmental aspects of intellective and perceptual growth. *(Lec. 3) Pre: 232.* Biller

**434 Introduction to Psychological Testing** *(I and II, 3)* Major techniques used in measurement of intelligence, aptitudes, abilities, achievement, interest, and personality. Laboratory on nature and content of objective and projective tests. Reliability and validity of the various tests carefully considered. *(Lec. 2, Lab. 2) Pre: education majors: 113 and EDC 371 or PSY 300; psychology majors: permission of instructor, junior standing.* Staff

**435 The Psychology of Social Behavior** *(I and II, 3)* Conceptual and empirical analyses of individual behavior in social contexts; attention to social motivation, attitude development and change, liking, conformity, aggression, altrusim. *(Lec. 3)* Lott and Staff

**436 Psychotropic Drugs and Therapy**
See Pharmacology and Toxicology 436.

**438 Psychotropic Drugs and Behavior**
See Pharmacology and Toxicology 438.

**442 The Exceptional Individual** *(I or II, 3)* Issues underlying the classification, institutionalization, and treatment of the physically, psychologically, and mentally disabled. Social psychology of attitudes toward the disabled, current legislation, and needs of the exceptional for integration into community life. *(Lec. 3) Pre: permission of department.* Gross

**450 Cognitive and Behavioral Analysis of Communication** *(II, 3)* Treatment of psychological processes and problems related to human communication. Emphasis is on various types of psychological analysis used in understanding communicational processes from the individual standpoint. *(Lec. 3) Pre: 113 and permission of instructor. In alternate years, next offered 1981-82.* Silverstein

**461 The Alcohol Troubled Person: Psychological and Social Issues** *(I or II, 3)* Causes and effects of alcoholism. Needs of those working with alcoholics, treatment and/or prevention of alcoholism. *(Lec. 3) Pre: 113, junior standing and permission of instructor.* Willoughby and Staff

**464 Humanistic Psychology** *(II, 3)* Discussion of humanistic approaches to the understanding and direction of behavior. Emphasis on the contemporary writers such as Rogers, Maslow, May, Moustakas. Discussions of phenomenology and existentialism. *(Lec. 3) Pre: 235 and junior standing. In alternate years, next offered 1981-82.* Berman

**479 Contemporary Problems for Modern Psychology** *(I and II, 3-12)* Central issues and recent developments in the field. Topics limited each semester to one of the following: (a) personality, (b) social, (c) learning, (d) methods and design, (e) developmental, (f) motivation, (g) perception, (h) clinical, (i) general, and (j) humanistic psychology. *(Lec. 3) A maximum of 4 semesters may be taken. Pre: 301, permission of department.* Staff

**480 The Female Experience** *(II, 3)* Topics ranging from the biological distinctiveness of women to social supports for sexism as they relate to attitudes, motives, and behavior of women. *(Lec. 3) Pre: 113 and at least one 200-level PSY course.* Lott and Staff

**489, 499 Problems in Psychology** *(I and II, 3 each)* Advanced work in psychology. Courses will be conducted as seminars or as supervised individual projects. Students must obtain written approval from proposed faculty supervisor prior to registration. *(Lec. or Lab. TBA) Pre: senior or graduate standing.* Staff

**505 Community Psychology** *(I, 3)*
**510 Intermediate Quantitative Methods** *(II, 3)*
**517 (or EST 517) Small N Designs** *(II, 3)*
**520 Psychometric Methods** *(I or II, 3)*
**522 Behavioral Assessment Techniques** *(II, 3)*
**532 Experimental Design** *(I or II, 3)*
**534 Clinical Interpretation of Standardized Psychological Tests** *(II, 3)*
**540 (or EDC 540) Learning Disabilities: Assessment and Intervention** *(SS, 3)*
**550 (or PCL 550) Operant Analysis of Behavior** *(I or II, 3)*
**554 Alternate Therapies** *(I or II, 3)*

## Recreation (RCR)

*Chairperson:* Associate Professor Polidoro (Physical Education, Health and Recreation)

**280 Introduction to Recreation and Leisure Studies** *(I, 3)* Development of recreation from a historical and cross-culture perspective with emphasis on theories of play and leisure. Study of the relationships of play, recreation and leisure in contemporary society. *(Lec. 3)* Seleen

**290 Recreation Programs and Leadership** *(I, 2)* Principles and practice of leadership in social recreation situations. Overview of school and community programs; planning and conducting activities for children, youth, and adults; developing personal resources for creativity. *(Lec. 1, Lab. 2)* Mandell

**306 Outdoor Recreational Activities: Man in His Environment** *(II, 3)* Lecture topics: back-packing, bicycling, camping, canoeing, horseback riding, mountain climbing, sailing, scuba diving; emphasizing skills, equipment, instruction centers, appreciation of natural areas. Laboratory requirement includes a 28-hour outdoor living project. *(Lec. 2, Lab. 2)* Seleen

**382 Community Recreation** *(I, 2)* Principles and objectives of recreational program planning with a consideration of facilities, equipment, and personnel. Particular attention to development of recreation leadership. *(Lec. 2)* O'Leary

**383 Introduction to Outdoor Recreation** *(I, 3)* Outdoor recreation as a distinct and separate concept, land and water resources, the various activities, and the necessary facilities. Considerable attention to the concern and role of governmental agencies and private enterprise. *(Lec. 3)* Staff

**391 Directed Study**
See Physical Education 391.

**416 Physical Aging and Leisure Skill** *(II, 3)* Designed to help potential geriatric workers understand complexities of aging using gerokinesiatrics and physical skills which aid in maintenance and improvement of total fitness. *(Lec. 3) Pre: senior or graduate standing and approval of instructor.* Seleen

**484 Supervised Field Work**
See Physical Education 484.

**485 Planning and Supervision of Recreation Facilities** *(I, 3)* Examination of the factors involved in the construction and/or renovation of facilities for most efficient multipurpose use and care and maintenance. Course includes field trips. *(Lec. 3) Pre: junior standing and permission of the department.* Staff

**486 Field Experience Seminar**
See Physical Education 486.

## Resource Development (RDV)

*Coordinator:* Assistant Professor Husband

**100 Natural Resource Conservation** *(I, 3)* Introduction to man's use and management of his natural resources: land, food, forest, wildlife, water, minerals and air, with a survey of contemporary resource-use prob-

lems in environmental pollution. *(Lec. 3)* Husband (S)

**101 Natural Resource Conservation Practicum** *(I, 1)* Field course to acquaint students with the broad resource problem areas in Rhode Island. Required for freshmen in Natural Resources. *(Lab. 2) Pre: current registration in 100 and/or permission of instructor.* Husband

## Resource Development Education (RDE)

*Program Director:* Professor McCreight

**444 Teaching of Agribusiness and Natural Resources**
See Education 444.

**486 Internship** *(I and II, 1-6)* Supervised participation in programs related to cooperative extension and teaching of agribusiness and natural resources. *Minimum of 35 hours' work per credit hour. May be repeated for a maximum of six credits.* Staff

## Resource Economics (REN)

*Chairperson:* Associate Professor Grigalunas

**105 Introduction to Resource Economics** *(II, 3)* Application of microeconomic principles to selected resource problem areas. The market mechanism and its alternatives are examined as methods of resolving contemporary resource use problems. *(Lec. 3)* Weaver (S)

**136 Fisheries Economics I** *(I, 3)* Supply and demand for fishery products. Cost and returns in harvesting and processing. Elements of accounting. Crew remuneration systems. *Required for students enrolled in the two-year fisheries program.* Holmsen

**236 Fisheries Economics II** *(I, 3)* Structure of the fishing industry. Market power and price determination. Vessel finance and insurance, fisheries policy, and management. *Pre: 136. Required for students enrolled in the two-year fisheries program.* Holmsen

**330 Managing Small Farms** *(II, 3)* Production, marketing, and policy problems for small farming operations. Decision-making, capital, and information sources. *(Lec. 3) Pre: 105 or permission of instructor.* Wallace

**341 Economics of Food Marketing** *(I, 3)* The development of marketing systems for agricultural products; institutional considerations, market costs, and margins; pricing and appraisal of alternative systems. *(Lec. 3) Pre: 105 and permission of instructor.* Wallace

**410 (310) Economics of Natural Resource Use** *(I, 3)* Physical, institutional and economic factors affecting the use of natural resources. Economics of conservation and scarcity applied to energy, commercial fishing and pollution problems. Economic dimensions of public policy alternatives. *(Lec. 3) Pre: ECN 328 or equivalent.* Sutinen

**430 International Resource Development** *(II, 3)* Development of resources in rural communities with special attention to coastal zone and marine resource development in the developing nations, particularly in relation to national planning and to world trade. *(Lec. 3) Pre: 410 or permission of instructor.* Staff

**435 Aquacultural Economics** *(II, 4)* Application of production economics and farm management principles to aquacultural production. Selected methods of measurement and analysis illustrated by case studies involving private or public aquacultural production and marketing. *(Lec. 3, Lab. 2) Pre: 105 or permission of instructor.* Gates

**440 Benefit-Cost Analysis** *(II, 3)* Basic concepts in benefit-cost analysis. Measurement, comparison of benefits and costs over time, and criteria for project design and selection. Problems and case studies in evaluation of natural resources. *(Lec. 3) Pre: 105 or permission of instructor.* Grigalunas

**455 Economics of Land, Forestry and Recreation Resources** *(II, 3)* Economic analysis of forestry and wildlife management, recreation planning, land use, and coastal zone management, covering problems in the economic evaluation and allocation of non-priced natural resources. *(Lec. 3) Pre: 410 or permission of instructor.* Staff

**460 Economics of Ocean Management** *(II, 3)* The role of marine resources use in the economy. Oceans policy arising from multiple use conflicts. Current marine resource issues such as fisheries, offshore oil, marine mining, shipping examined. *(Lec. 3) Pre: 410 or permission of instructor.* Lampe

**491, 492 Special Projects** *(I and II, 1-3 each)* Workshop for advanced students wherein individuals or small groups are assigned projects requiring the analysis of natural resource and allocation problems with particular emphasis on marine resources. *Pre: permission of department.* Staff

**514 Economics of Marine Resources** *(I, 3)*
**527 (or ECN 527) Macroeconomic Theory** *(I, 3)*
**528 (or ECN 528) Microeconomic Theory** *(I, 3)*
**532 (or CPL 521) Land Resource Economics** *(II, 3)*
**534 Economics of Natural Resources** *(II, 3)*
**543 Economic Structure of the Fishing Industry** *(I, 3)*
**550 The Economics of Exhaustible Marine Resources** *(II, 3)*
**576 (or ECN 576, EST 576) Econometrics** *(I, 3)*
**591, 592 Special Projects** *(I and II, 1-3 each)*
**595 Problems of Modernization in Developing Nations** *(II, 3)*

## Resource Mechanics (REM)

*Chairperson:* Professor McGuire

**322 Power Units** *(II, 3)* Principles of operation, maintenance, and adjustment of power units including gasoline and diesel engines and electric motors. Emphasis on tractors and other power units important in farm, nursery, greenhouse, and grounds maintenance operations. *(Lec. 2, Lab. 2)* McKiel

**362 Power Equipment** *(II, 3)* Functional components of machines (exclusive of the power unit) used for turfgrass maintenance and production of specialized crops. Principles and techniques of selection, operation, adjustment and maintenance of machinery. *(Lec. 2, Lab. 2) In alternate years, next offered 1981-82.* McKiel

**451 Soil Conservation Technology** *(I, 3)* Principles and practices involved in mechanical protection, improvement, and development of soil and water resources. Design of conservation features and structures. *(Lec. 2, Lab. 3) Pre: MTH 109 or equivalent.* McKiel

**484 Structures** *(II, 3)* Principles of design and construction of buildings and structures related to culture of plants, managing soils, and resource development. Planning, materials, construction components, environmental control, and waste disposal. *(Lec. 3) Pre: MTH 109 or equivalent or permission of instructor. In alternate years, next offered 1982-83.* McKiel

**491, 492 Special Projects and Independent Study** *(I and II, 1-3 each)* Laboratory, library, and field facilities are available for special projects concerned with resource mechanics. *(Lab. 3-9) Not for graduate degree program credit. Pre: permission of department.* McKiel or Wilson

## Respiratory Therapy (RTH)

**499 Special Problems** *(I and II, 1-3)* Method of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. *(Lab. 3-9) Pre: permission of department. Not for graduate credit.* Staff

## Russian (RUS)

*Section Head:* Associate Professor Aronian

**101, 102 Elementary Russian** *(I and II, 3 each)* Introduction to fundamentals of grammar; exercises in speaking, reading, and writing. Emphasis on pronunciation, intonation, and aural comprehension of contemporary spoken Russian. Language laboratory required. *(Lec. 3)* Staff (F)

**103, 104 Intermediate Russian** *(I and II, 3 each)* Completion of fundamentals of grammar; exercises in speaking and writing, reading of contemporary texts; emphasis on distinction between spoken and written language. Language laboratory required. *(Lec. 3) Pre: 102 or equivalent.* Aronian (F)

**205, 206 Advanced Russian** *(I and II, 3 each)* Oral reports, written compositions, and classroom discussion based on readings in Russian history and culture, literature, and current Soviet affairs. Listening projects in laboratory. *(Lec. 3) Pre: 104 or equivalent.* Aronian

**325, 326 Introduction to Literary Studies in Russian** *(I and II, 3 each)* Techniques of literary criticism applied to Russian literary works in various genres. Listening projects in laboratory emphasizing poetry and drama. *(Lec. 3) Pre: prior or concurrent registration in 205, 206. In alternate years, next offered 1982-83.* Aronian (A)

**391, 392 Masterpieces of Russian Literature** *(I and II, 3 each)* Prose, poetry, and drama from late eighteenth through twentieth century in translation. Emphasis on literary movements through textual analysis. Authors range from Pushkin to Pasternak, including Dostoevsky and Tolstoy. *(Lec. 3)* C. Driver and Aronian (A) (F)

**460, 461 The Russian Novel** *(I and II, 3 each)* Major developments in themes and techniques, significant shifts of mode. Influences on the emergence of the novel in Russia. Laboratory required. *(Lec. 3) Pre: prior or concurrent registration in 205, 206. In alternate years, next offered 1981-82.* Aronian

**497, 498 Directed Study** *(I and II, 3 each)* For the advanced student. Individual research and reports on problems of special interest. *Pre: acceptance of a project by a member of the staff and departmental approval.* Staff

## Social Welfare (SWF)

*Chairperson:* Associate Professor Gelles (Sociology and Anthropology)

**311 Introduction to Social Work** *(I or II, 3)* Growth and development of social work concepts, philosophies, and procedures under voluntary and public auspices. *(Lec. 3) Pre: SOC 202 or 304, sophomore standing.* Maynard

**313 Social Welfare Services** *(I or II, 3)* Organized efforts to meet the welfare needs of individuals and groups through federal, state, and local institutions and agencies, with particular reference to Rhode Island. *(Lec. 3) Pre: SWF 311 and one of the following: ECN 123, HIS 142, PSC 113, junior standing.* Maynard

**317 Social Work Methods** *(I or II, 3)* Principles and methods of casework, with emphasis on understanding and aiding individuals and families faced with personal-social difficulties. Nature and varieties of group work. *(Lec. 3) Pre: SOC 304 and SWF 313, PSY 235 or 254, or HCF 304, permission of department.* Maynard

## Sociology (SOC)

*Chairperson:* Associate Professor Gelles (Sociology and Anthropology)

**202 General Sociology** *(I and II, 3)* Introductory description and analysis of the structure and dynamics of human society. Social norms, groups, intergroup relations, social change, stratification, and institutions. *(Lec. 3)* Staff (S)

**208 Issues and Problems in Contemporary American Society** *(I or II, 3)* Theoretical analysis of contemporary issues and societal trends and their impact on social organization. Social developments occurring after World War II analyzed and assessed according to their import and implications for social change. Emphasis on a sociological understanding of current issues. *(Lec. 3)* Staff (S)

**301 Introduction to Methods of Sociological Research** *(I and II, 3)* Scientific method in sociological research. Research design, data collection techniques, sampling, measurement, table construction, and interpretation. Emphasis on critical reasoning and evaluation of sociological research. *(Lec. 3) Pre: one 200-level sociology course.* Bassis, Gelles, Shea and Peters

**302 Sociology in Applied and Community Settings** *(I and II, 3)* Field experience and research in applying sociological concepts and methods to problems of community agencies and settings. Formulating and developing approaches to ongoing social systems; introduction to program analysis and evaluation. *Open only to sociology majors. May be repeated once. Pre: 202 or 208; 301.* Reilly, Rosengren and Staff

**304 Social Psychology** *(I and II, 3)* Examination of social basis of personality development and behavior, the symbolic environment, the self and group motivation, attitudes and beliefs, social roles. *(Lec. 3)* Staff (S)

**306 Development of Human Societies** *(I or II, 3)* Sociological perspective in which whole societies are the unit of analysis. Succession of hunting and gathering, horticultural, agrarian, industrial societies. Social change is central to approach, focus on the place of technology in the changing sociocultural pattern *(Lec. 3) Pre: one 200-level course.* Staff

**310 Rural Sociology** *(I or II, 3)* Population and culture in rural United States; emphasis on analyzing the life of the people in a rural environment as an integral part of contemporary organized society. *(Lec. 3) Pre: 202 or 208.* Spaulding

**312 The Family** *(I or II, 3)* The family as a social institution, its uniformity and variability in historical time and social space. Emphasis on contemporary American family. Variation in institutional patterns by rural-urban residence, region, race, social class. Issues and conflicts in the contemporary family scene. *(Lec. 3) Pre: 202 or 208.* Gelles

**314 Juvenile Delinquency** *(I or II, 3)* Causes of delinquency; juvenile courts and probation; correctional institutions; programs of prevention. *(Lec. 3) Pre: 202 or 208.* England

**316 The Sociology of Welfare Institutions** *(I or II, 3)* Development of British and American welfare. Influence of ideology on welfare and poverty. Contemporary American welfare. Social Security, poverty, welfare revolt of the 1960's. Evaluation of present and proposed welfare structure. *(Lec. 3) Pre: 202 or 208 or permission of instructor.* Reilly (S)

**324 Sociology of Medicine** *(I or II, 3)* Health and illness in light of American social structure and social values. Patterns of diversity and conflict in health care delivery, and discrepancies between technical aspects of medicine and its organization and distribution. *(Lec. 3) Pre: 3 credits in sociology and anthropology.* Rosengren

**330 Criminology** *(I or II, 3)* Nature and extent of crime; past and present theories of crime causation; criminal behavior in American society and its relation to personal and cultural conditions. *(Lec. 3) Pre: 202 or 208.* England and Carroll (S)

**336 Social Inequality** *(I or II, 3)* Dimensions and dynamics of inequality in society; concepts of class and status; processes of social mobility. *(Lec. 3) Pre: 202 or 208.* Gersuny and Reilly (S)

**338 Population Problems** *(I or II, 3)* Problems in the growth, decline, and composition of populations. Effects of fertility, mortality, migration. Special attention to American society. *(Lec. 3) Pre: 202 or 208, or APG 203.* Shea (S)

**340 Minority and Majority Relations** *(I or II, 3)* Relations among the various ethnic, religious, racial, and political minorities and

majorities, with special reference to the United States. *(Lec. 3) Pre: 202 or 208.* Carroll and Reilly (S)

**341 Industrial Sociology** *(I or II, 3)* Work and the organizations of industry, work roles, work groups, and authority structures; labor-management relations; some aspects of industrialization. *(Lec. 3) Pre: 6 credits in sociology or anthropology, including 202, 208, or APG 203.* Gersuny

**342 The Sociology of Sex Roles** *(I or II, 3)* Sex roles within social institutions, personal relationships, and sex role playing. Social policy toward liberating society. *(Lec. 3) Pre: 202 or 208.* Reilly and Shea (S)

**370, 371 Seminars** *(I and II, 3 each)* Areas of special research interests of graduate and undergraduate students not covered in other courses. May be taken as honors courses. *(Lec. 3) Pre: permission of department.* Staff

**410 Complex Organizations in Modern Society** *(I or II, 3)* Role of large formal organizations in contemporary society: schools, hospitals, welfare institutions, administrative agencies, and others dealing with clients. Structure of organizations, their relations to one another and to their community settings. *(Lec. 3) Pre: 6 credits in sociology or anthropology, including 202 or 208, or APG 203.* Rosengren

**414 Demography** *(I or II, 3)* Vital statistics and their consequences for social structure and social change. Analysis of demographic techniques as applied to the measurement of fertility, mortality, morbidity, and migration. Development of methods for estimating population projections. *(Lec. 3) Pre: 338 or permission of department.* Shea

**416 Deviant Behavior** *(II, 3)* Examination and analysis of major theories of deviant behavior. Application of these theories to particular types of deviant behavior. *(Lec. 3) Pre: one 200-level and one 300-level course or permission of instructor.* Gelles and Carroll

**418 Collective Behavior** *(I or II, 3)* Analysis of non-customary social phenomena. Crowds, riots, mobs, crazes, fads, fashions, and social movements considered as product and cause of social change. *(Lec. 3) Pre: 202 and 304.* Gardner

**422 The Sociology of the Arts** *(I or II, 3)* Consideration of the relationship between the arts and socially established meanings. Social structure, and societal myths, with special attention to consonant and dissonant functions of the arts for social cohesion. *(Lec. 3) Pre: 6 credits in sociology above the 200 level or permission of instructor.* Travisano

**423 Mortality and Morbidity** *(I, 3)* Study of demographic methods, trends, differentials, and policy regarding death and illness; emphasis on the U.S. situation. *(Lec. 3) Pre: 338 or permission of instructor. In alternate years.* Staff

**430 Social Pathology and Social Change** *(I or II, 3)* Pathological characteristics as aspects of social change; social structure analyzed as relevant to development of slums, migration, crime, delinquency, divorce, poverty, alcoholism, suicide, drug addiction, and mental deficiency and disorder. *(Lec. 3) Pre: 202, or 208; 304.* Spaulding and Gelles

**434 Urban Sociology** *(I or II, 3)* Patterns of urban development, taking into account sociological characteristics of urban life. Problems of urban redevelopment and planning. *(Lec. 3) Pre: 202 or 208.* Gardner

**436 Sociology of Politics** *(I or II, 3)* Social and cultural contexts of contemporary politics. Functions and problems of mass, class and power group participation in politics. Conditions and outlook for democracy in large societies. *(Lec. 3) Pre: 202 or 208.* Wells

**438 Aging in Society** *(II, 3)* Problems of growing old in a changing society. Organizational and socio-historical factors are examined in terms of their consequences for the present status of the aged. *(Lec. 3) Pre: 6 credits in sociology or anthropology, including 202 or APG 203.* Spence and Staff

**440 The Sociology of Mental Disorder** *(I or II, 3)* Phenomenon of mental disorder considered in light of recent research findings and developments in sociological theory. Mental disorder discussed as an outgrowth of societal processes. *Pre: 202 or 304 and one 300-level course.* Travisano

**442 The Sociology of Education** *(I or II, 3)* Social organization of education as an institution, analysis of the antecedents and consequences of education, application of sociological psychological theory to educational systems and processes. *(Lec. 3) Pre: one 200- and one 300-level course in sociology.* Bassis

**444 The Sociology of Religion** *(I or II, 3)* Sociological theory and research in the analysis of interrelationships among religious culture, secular culture, the social structure of religious groups, and general social structure. *(Lec. 3) Pre: one 200- and one 300-level course in sociology.* Staff

**446 Sociology of Knowledge** *(I or II, 3)* Theories and research on the social bases of ideas. Emphasis on the works of Durkheim, Mannheim, and Marx and their influences on "common sense" interpretations of social life. *(Lec. 3) Pre: one 200- and one 300-level course in sociology.* Staff

**451 Class and Power** *(II, 3)* Class structures and patterns of power in advanced societies; comparisons of inequality in capitalist and socialist societies; theories of the relation between class and power; class consciousness, conflict and accommodation. *(Lec. 3) Pre: 336 or graduate standing. In alternate years.* Gersuny

**492 History of Sociological Thought** *(I and II, 3)* Development of sociology as reflected in writings of American and European scholars: Plato, Aristotle, Rousseau, Vico, Spencer, Durkheim, Marx, Weber, Veblen, R. Merton, Parson, and others. *(Lec. 3) Pre: 12 credits in sociology.* Gardner, Peters and Wells

**501 Classical Sociological Theorists** *(I, 3)*
**502 Contemporary Sociological Theory** *(I or II, 3)*
**505 (or PSC 505) Public Program Evaluation** *(I and II, 3)*
**507 Methods of Sociological Research** *(I, 3)*
**508 Individual and Social Organization** *(I or II, 3)*
**510 Seminar in Deviance** *(I or II, 3)*
**513 Sexual Inequality** *(I or II, 3)*
**516 Seminar in Law and Society** *(II, 3)*
**518 Social Welfare: Planning and Policy** *(II, 3)*
**520 Seminar in Sociological Topics** *(I or II, 3)*
**521 Behavior Systems in Crime** *(I, 3)*
**522 Issues in Corrections** *(II, 3)*
**523 Institutional Racism** *(I, 3)*
**524 Issues in Medical Care Delivery Systems** *(II, 3)*
**532 Sociology of Work Organizations** *(II, 3)*
**552 Seminar in Teaching Undergraduate Sociology** *(II, 3)*
**571, 572 Directed Study or Research** *(I and II, 3 each)*
**595 (or REN 595) Problems of Modernization in Developing Nations** *(II, 3)*
**598 Field Placement and Seminar** *(I and II, 6)*

## Soil Science (SLS)

*Section Head:* Professor Felbeck, Jr.

**212 Soils** *(I and II, 3)* Physical, biological, and chemical properties of soils and their practical application to plant science. Introduction to soil genesis, classification, and productivity. Soil-man interactions. *(Lec. 3)* Sheehan (N)

**213 Soils Laboratory** *(I and II, 1)* Mechanical analysis, mineralogical identification, soil organic matter, bulk density, cation exchange, soil profile, soil water, weathering of minerals, soil acidity, and lime requirements. Independent study. *(Lab. 2) Pre: concurrent registration in 212 or permission of instructor.* Sheehan

**401, 402 Plant and Soil Science Seminar** See Plant Science 401, 402.

**411 Soil Chemistry** *(II, 3)* Inorganic chemical reactions of soil systems in nature and of laboratory analysis of soils. *(Lec. 2, Lab.*

*3) Pre: junior standing, 212, 213 or equivalent. Quantitative analysis advised.* Roberts

**412 Soil Biochemistry** *(II, 3)* Origin, chemical and physical characteristics, and transformations of organic compounds and biological polymers in soils. Previous courses in organic chemistry and soils advised. *(Lec. 1, Lab. 6) Pre: junior standing. In alternate years, next offered 1981-82.* Felbeck

**450 Soil Conservation and Land Use** *(I, 3)* Application of soil survey interpretation as a tool in soil and water conservation and land use planning. Implications of soil properties and problems for land use considered with emphasis on urbanizing situations. *(Lec. 2, Lab. 2) Pre: 212 or permission of instructor.* Wright

**468 Soil Genesis and Classification** *(I, 4)* Genesis, morphology, classification, and geographic distribution of soils. Broad principles governing soil formation. Laboratory includes field trips to observe different types of soils. *(Lec. 3, Lab. 2) Pre: 212.* Wright

**501 to 504 (or PLS 501 to 504) Graduate Seminar in Plant and Soil Science** *(I and II, 1 each)*

**568 Recent Advances in Soil Science** *(II, 3)*

**591, 592 (or PLS 591, 592) Non-Thesis Research in Plant and Soil Science** *(I and II, 1-3 each)*

## Spanish (SPA)

*Section Head:* Assistant Professor Manteiga

**101, 102 Spanish Level One** *(I and II, 3 each) 101:* Introduction to Spanish for beginners. *102:* Continued development of elementary Spanish communication skills *(Lec. 3)* Morin and Staff (F)

**103, 104 Spanish Level Two** *(I and II, 3 each)* Reading and discussion of representative authors, grammar review, and continued practice in language skills, to broaden understanding of Hispanic culture. *(Lec. 3) Pre: 102 or equivalent.* Navascués and Staff (F)

**121 Everyday Spanish** *(I or II, 3)* Oral practice emphasizing a practical application of Spanish for travel or basic communication. Readings from current Spanish and Latin American newspapers and magazines. Reports dealing with contemporary problems and everyday situations. *(Lec. 3) Pre: 102 or permission of instructor.* Trubiano

**205, 206 Spanish Level Three** *(I and II, 3 each)* Development and refinement of all language skills, primarily through the use of Hispanic cultural and literary models. *(Lec. 3) Pre: 104 or equivalent.* Hutton and Staff

**301 Hispanic Culture Through the Seventeenth Century** *(II, 3)* Significant contributions in literature and arts, from the unique period of coexistence of Christians, Jews, and Muslims during the Reconquest through the Golden Age of the 16th and 17th centuries. *(Lec. 3) Pre: 206 or equivalent. In alternate years next offered 1982-83.* Hutton

**302 Romanticism and Realism** *(I, 3)* The transformation of Spanish literature and culture in the 19th century as seen through works of Moratín, Larra, Zorrilla, Bécquer, Galdós and others. *(Lec. 3) Pre: 206 or equivalent. Next offered 1981-82.* Navascués

**303 Contemporary Spain: Its Literature and Culture since 1927** *(I, 3)* Modern Spain seen through its literature, arts, and social developments before and after the Spanish Civil War. *(Lec. 3) Pre: 206 or equivalent. In alternate years, next offered 1982-83.* Manteiga (A)

**305 Early Spanish-American Literature and Culture** *(II, 3)* Study of the early development of Spanish-American culture through its literature, from Conquest to Independence. *(Lec. 3) Pre: 206 or permission of instructor.* Morin (A)

**306 Modern Spanish-American Literature and Culture** *(I or II, 3)* Significant figures and developments in literature, the arts, and society, from Independence to the present. *(Lec. 3) Pre: 206 or permission of instructor.* Staff (A)

**391, 392 Spanish Literature in Translation** *(I and II, 3 each)* Reading and analysis in English of Spain's most significant contributions to world literature: poetry, novel, drama, essay. Works read in English translation. Works through the seventeenth century in the first semester; those of the nineteenth and twentieth in the second. *(Lec. 3) May not be used for credit toward a concentration in Spanish.* Staff (A)

**393 Contemporary Spanish-American Literature in Translation** *(I or II, 3)* Reading in English and analysis of selected works of twentieth-century authors from various Spanish-American countries. *(Lec. 3)* Morin (A) (F)

**401 Oral and Dramatic Presentation of Hispanic Literature** *(I, 3)* Practice in effective oral communication in Spanish and appreciation of Hispanic literature through analysis and class presentation of drama, poetry, and prose. *(Lec. 3) Pre: a 300-level course or permission of instructor.* Navascués

**409 History of the Spanish Language** *(II, 3)* Linguistic development of Castilian from the earliest documents to the present. Ibero-Romance dialects. New World Spanish. Hispano-Judaic dialects. *(Lec. 3) Pre: one 300-level course or permission of instructor.* Rogers

**410 Field Workshop** *(SS, 3-6)* Cultural visit to Spain or Hispanic America. Significant monuments and places of interest to the student of literature and civilization will be studied. Lectures supplemented by assigned readings. *(Lec. 3-6) Pre: permission of instructor.* Staff

**430 Castilian Prose of the 16th and 17th Centuries** *(II, 3)* Literary significance of the Renaissance and Baroque periods and an analysis and critical examination of the prose works of the principal writers of this Golden Age of Castilian Literature. *(Lec. 3) Pre: one 300-level course in Spanish or permission of instructor. In alternate years.* Hutton

**431 Drama and Poetry of the 16th and 17th Centuries** *(II, 3)* Spanish poetry and drama from the early Renaissance through the Baroque. *(Lec. 3) In alternate years. Pre: a 300-level course in Spanish.* Trubiano

**451 The Spanish Novel of the Nineteenth Century** *(I, 3)* Development of realism and naturalism in the novel of the second half of the nineteenth century Spain. *(Lec. 3) Pre: one 300-level course or permission of instructor. In alternate years.* Navascués

**470 Topics in Hispanic Literature** *(I and II, 3)* Special topics or authors not emphasized in other courses. *(Lec. 3) Pre: a 300-level course or permission of instructor.* Staff

**481 Don Quijote** *(I, 3)* Life and times of Miguel de Cervantes Saavedra and the reading and critical interpretation of his work, *El ingenioso hildalgo Don Quijote de la Mancha. (Lec. 3) Required for students with a concentration in Spanish. Pre: one 300-level course or permission of instructor. In alternate years, next offered 1982-83.* Hutton

**485 Modern Spanish Narrative** *(II, 3)* Representative narrative works by Spain's major authors from the Generation of 1898 to the present. *(Lec. 3) Required for students with a concentration in Spanish. Pre: two 300-level courses in Spanish or permission of instructor.* Manteiga

**486 Modern Spanish Poetry and Drama** *(II, 3)* Selected poetry and plays from the 19th Century through the present. *(Lec. 3) Pre: a 300-level course in Spanish. In alternate years.* Mantegia

**487 Modern Spanish-American Narrative** *(I, 3)* The development of the Spanish-American narrative in the 20th century. *(Lec. 3) Pre: a 300-level course in Spanish.* Morin

**497, 498 Directed Study** *(I and II, 3 each)* For the advanced student. Individual research and reports on problems of special interest. *Pre: one 300-level course, acceptance of a project by a member of the staff and department approval.* Staff

**501 Pedagogical, Artistic and Cultural Perspectives** *(I, 3)*
**502 Language Structure and Expression** *(II, 3)*
**510 Contemporary Spanish Workshop** *(SS, 3-6)*
**571 Modern Spanish-American Authors** *(I, 3)*
**572 Evolution of Spanish-American Culture and Thought** *(II, 3)*
**581 Spanish Writers** *(I, 3)*
**582 Cervantes: Theater and Novels** *(II, 3)*
**584 Interpretations of Modern Spain** *(I, 3)*
**590 The Hispanic Presence in the United States** *(II, 3)*

## Speech Communication (SPE)

*Chairperson:* Professor Devlin

**101 Fundamentals of Oral Communication** *(I and II, 3)* Development and improvement of fundamentals and attitudes essential to effective and ethical communication. Preparation, organization, and presentation of the fundamentals in various speaking environments. Students demonstrating proficiency may petition for advanced placement. *(Lec. 3)* Staff (C)

**102 Public Speaking** *(II, 3)* Adaptation of traditional rhetorical doctrines to contemporary speaking situations: informative, persuasive, and special occasion. Practice in the preparation and delivery of impromptu, extemporaneous, and manuscript speeches. *(Lec. 3) Pre: 101.* Staff

**201 Interpersonal Communication** *(I and II, 3)* Examination of the human interaction process in informal interpersonal communication situations. Focus on game theory, defensive and supportive climates, nonverbal communication, and the interview and informal dialogue. *(Lec. 3)* Staff (C)

**205 The American Rhetorical Tradition** *(II, 3)* The study of historically significant ideas, issues, and causes through the critical analysis of selected American public addresses. Staff (L)

**210 Persuasion: The Rhetoric of Influence** *(I and II, 3)* Analysis of communication influencing beliefs, attitudes, and/or behavior. Investigation of rhetorical elements of logical, emotional, and ethical appeals. Study of elements critical for effective producers and consumers of persuasion. *(Lec. 3)* Staff (L)

**215 Argumentation and Debate** *(I, 3)* Argumentative speech, with special emphasis on debate. Analysis of the proposition, construction of a case, use of evidence and reasoning, rebuttal and the technique of brief-drawing. Analysis of important economic and political questions. *(Lec. 3)* Roth

**216 Intercollegiate Debating** *(I and II, 1)* Intercollegiate tournament debating. Open to students who are actively engaged in the intercollegiate debate and forensics program. May be repeated for a maximum of 4 credits. *Pre: permission of the director of forensics.* Roth

**220 Group Discussion** *(I and II, 3)* Studies in small group communication. Emphasis on cohesiveness, role-playing, leadership, group pressures, and patterns of interaction in a variety of problem-solving small group situations. *(Lec. 3)* Staff

**231 Oral Interpretation of Literature** *(I and II, 3)* Recognition and appreciation of content and communication of thought and emotion through oral reading. Practice in the analysis and interpretation of poetry, prose, and drama. *(Lec. 3)* Caldwell (A)

**260 Speech Development and Correction** *(I and II, 3)* Normal development of human speech, causes of speech and hearing disorders, and techniques of speech and hearing rehabilitation. For those in teaching, nursing, guidance, psychology, and education of the physically handicapped and mentally retarded. *(Lec. 3)* FitzSimons

**261 Survey of Hearing and Deafness** *(I and II, 3)* Introduction to the science of audiology. Pathologies of the hearing mechanism, basic methods of audiometry, interpretation of the audiogram, hearing aids, and rationale and methods in hearing conservation programs. Observations and practice in the Rhode Island Hospital Hearing and Speech Center. *(Lec. 3)* Staff

**300 Theoretical Perspectives of Human Speech** *(I, 3)* Survey comparing and integrating non-systems communication theories; focus on application of these theories to human behavior and on process of speaking. *(Lec. 3)* Brownell and Katula

**301 Systems of Communication** *(II, 3)* Investigation of communication networks in non-symbolic and symbolic systems, focusing on general systems theory, cybernetics, the human physiological system, the computer, and animal and human code systems. *(Lec. 3)* Brownell

**304 Speech Communication Survey** *(I and II, 3)* Survey of the major areas within the field of speech communication. Emphasis on developing student's ability to identify, define, formulate, investigate, and describe problems and phenomena within the discipline. *(Lec. 3)* Staff

**310 Contemporary Oral Communication** *(I and II, 3)* Analysis of contemporary rhetorical theories as they relate to speaking in business, civil rights, education, government, labor, law and religion. Focus each semester on a critical contemporary issue. *May be repeated once with permission of instructor. (Lec. 3)* Staff

**315 Environmental Dimensions of Communication** *(I, 3)* Investigation of the physical properties of the environment and how individuals' perception and design of these properties affect their communication in personal, social, and public situations. Analysis and experimentation with the ways the environment can be used to facilitate communication. *(Lec. 3)* Anderson and Brownell

**317 Advanced Argumentation and Debate** *(II, 3)* Analysis of advanced argumentation and debate theory and practice. Examination of debate tournament structure and the responsibilities of debate coaching, in terms of organizing and implementing debate programs. *(Lec. 3) Pre: 215 and permission of instructor.* Roth

**319 Principles and Practice of Interviewing** *(I and II, 3)* Principles and procedures common to all interviews. Survey of types and models. Questions, listening, motivation, inhibitors in interviews. Concentration on employment and informational interviews. Emphasis on out-of-classroom assignments. *(Lec. 3) Pre: sophomore standing or permission of instructor.* Staff

**320 Oral Communication for Management** *(II, 3)* Examination of business and organizational communication. Emphasis on channels of communication, communication barriers, leadership, and the development of communication skills for management personnel. *(Lec. 3)* Katula

**331 Contemporary Approaches to Prose Fiction** *(I and II, 3)* Oral interpretation of prose fiction with emphasis on the short story and the novel. Contemporary approaches to the oral study of literature such as dramatistic and rhetorical analyses and an introduction to chamber theatre. *(Lec. 3) Pre: 231 or permission of instructor.* Caldwell and Staff

**332 Oral Interpretation of Poetry** *(I and II, 3)* Practice in the oral interpretation of poetry through oral performance and written analysis. *(Lec. 3) Pre: 231 or permission of instructor.* Caldwell and Staff

**333 Oral Interpretation of Black Literature** *(II, 3)* Study and oral presentation of literature by black American authors. Class performances, discussion, reports, and analysis of the literature. *(Lec. 3) Pre: 231 or permission of instructor.* Caldwell and Staff

**337 Intercultural Communication** *(II, 3)* Study of cultural similarities and differences as they affect communication within and across cultural boundaries. *(Lec. 3) In alternate years, next offered 1981-82.* Doody

**372 Auditory and Speech Mechanisms** *(II, 3)* Structure and function of the organs of hearing and speech as they relate to normal and pathological communication; theories of cortical involvements, central and peripheral nervous systems relevant to rehabilitation procedures. *(Lec. 3) Pre: junior standing and permission of department.* Staff

**373 Phonetics** *(I, 3)* International Phonetic Alphabet; analysis of phonetic and phonemic elements in major American English dialects; practice in transcription of standard and defective speech. *(Lec. 3) Pre: junior standing.* Beaupre and Staff

**374 Communication Processes** *(II, 3)* Psychocommunication processes basic to speech; theories of language learning; psychology of hearing and deafness; interrelationships between speech and personality. *(Lec. 3) Pre: junior standing.* Beaupre

**375 Language Development** *(I, 3)* Development phenomena in speech and language; causal factors of delayed speech and language; survey of evaluative and habilitative programs for children with deviant language development. *(Lec. 3) Pre: junior standing.* FitzSimons

**376 Hearing and Speech Science** *(I, 3)* Physical properties and speech signal, analysis of the physical bases of speech production and speech perception. *(Lec. 3) Pre: 372 and 6 credits in natural sciences.* Staff

**391, 392 Honors Work** *(I and II, 1-3 each)* Thesis work or an equivalent independent project under faculty supervision for honors students participating in the University Honors Program. *Pre: admission to departmental honors program.* Staff

**400 Rhetoric** *(I, 3)* Inquiry into standards for the evaluation and improvement of instrumental discourse. Detailed considerations of invention, disposition, and style in oral and written communication. *(Lec. 3)* Bailey and Katula

**410 Semantics** *(II, 3)* Role of language and other symbol systems in thought and communication behavior. Informative, valuative, incitive, and systematic uses of signs; the linguistic bases of productive and pathological communicative behavior. *(Lec. 3)* Bailey

**415 The Ethics of Persuasion** *(II, 3)* Relation of persuasion to ethics is examined. Purposes, means, results, and contexts are considered in making rhetorical judgments of interpersonal, political, and institutional communications. *(Lec. 3) In alternate years, next offered 1982-83.* Bailey

**417 Speech in the Elementary School** *(I and II, 3)* Analysis of the role of the classroom teacher in identification, referral, and remediation of speech handicapped. Examination of teacher responsibilities in supplementing special education procedures for the orally handicapped. *(Lec. 3) Pre: permission of instructor.* Grzebien

**420 Seminar in American Public Address and Criticism** *(II, 3)* Study of selected American speakers, speeches, and/or movements. Rhetorical analysis used to measure the impact of speakers, speeches, and movements studies. *(Lec. 3) Pre: permission of instructor.* Anderson, Doody

**430 Political Communication** *(I, 3)* Analysis of political communication in campaign and non-election situations. Examination of ghost-writing; content analysis, strategies, image-making of political speaking; TV and radio presentations; influences on and effects of political communication. *(Lec. 3) Pre: permission of instructor.* Devlin

**431 Readers Theatre** *(II, 3)* Study and practice in selecting, adapting, and arranging a variety of written materials for group performances. A compilations script formulated by each student. *(Lec. 3) Pre: 231 or permission of instructor. In alternate years, next offered 1982-83.* Staff

**433 Chamber Theatre** *(I, 3)* Oral interpretation of prose fiction through group performance. Practice in the adapting and directing of narrative fiction for chamber theatre, a technique for dramatizing point of view. *(Lec. 3) Pre: 231 or permission of instructor.* Caldwell

**471, 472 Internship in Speech Communication** *(I and II, 3 each )* Provides the student with direct supervised participation in a variety of speech communication situations and occupations. *(Lec. 1, Lab. 4) Pre: 18 credits in speech and permission of department.* Staff

**475 Gestural Communication** *(I, 2)* Visual systems such as Amesian, with emphasis on the cheirology and syntax of signing, vocabulary, and levels of language among deaf communicators. Finger spelling and sign language for educational, rehabilitative, and artistic goals studied. *(Lec. 1, Lab. 2) Pre: junior standing or graduate standing. Not for graduate program credit in Speech Pathology or Audiology.* Beaupre

**491, 492 Special Problems** *(I and II, 1-3 each)* Selected areas of study pertinent to oral communication. Instruction may be offered in class seminar, or tutorial environments according to specific needs and purposes. Staff

**504 Speech and Hearing Research** *(I, 3)*
**551 Measurement of Hearing** *(I, 2)*
**552 Advanced Measurement of Hearing** *(II, 2)*
**553 Pedoaudiology** *(I, 2)*
**554 Auditory Training and Speechreading** *(II, 2)*
**555 Electronically Assisted Hearing** *(I, 2)*
**556 Automatic Audiometry** *(II, 2)*
**561 Disorders of Articulation** *(I, 2)*
**562 Disorders of Voice** *(I, 2)*
**563 Disorders of Rate and Rhythm** *(II, 2)*
**564 Disorders of Symbolization** *(II, 2)*
**565 Diagnostic Procedures: Voice and Articulation** *(I, 2)*
**566 Diagnostic Procedures: Rhythm and Symbolization** *(II, 2)*
**567 Clinical Practicum in Speech Pathology** *(I and II, 1-3)*
**568 Clinical Practicum in Audiology** *(I and II, 1-3)*
**572 Medical Audiology** *(II, 3)*
**573 Contemporary Problems in Audiology** *(I, 3)*
**574 Environmental Audiology** *(II, 3)*
**575 Speech and Language for Deaf or Hard of Hearing Child** *(I, 3)*
**576 Speech and Language for Deaf or Hard of Hearing Adult** *(II, 3)*
**581 Cerebral Palsy** *(I, 3)*
**582 Stuttering and Cluttering** *(II, 3)*
**583 Cleft Palate and Other Orafacial Deformities** *(I, 3)*
**584 Delayed Speech and Language** *(II, 3)*
**585 Aphasia and Allied Language Disorders** *(I, 3)*
**586 Alaryngeal Speech** *(II, 3)*

## Statistics

**Experimental Statistics**
220 Statistics in Modern Society
408 or 409 Statistical Methods in Research I
412 Statistical Methods in Research II
413 Data Analysis
491 Directed Study in Experimental Statistics
492 Special Topics in Experimental Statistics
500 Nonparametric Statistical Methods
501 Analysis of Variance and Variance Components
502 Applied Regression Analysis
517 Small N Designs
520 Fundamentals of Sampling and Applications
532 Experimental Design
541 Multivariate Statistical Methods
542 Discrete Multivariate Methods
550 Ecological Statistics
591 Directed Study in Experimental Statistics
592 Special Topics in Experimental Statistics

**Industrial Engineering**
411 Engineering Statistics I
412 Engineering Statistics II
513 Statistical Quality Control
553 Advanced Statistical Methods for Research and Industry

**Management Science**
201, 202 Managerial Statistics
370 Topics in Managerial Statistics
375 Bayesian Statistics in Business

**Mathematics**
451 Introduction to Probability and Statistics
452 Mathematical Statistics
456 Probability
550 Advanced Probability
551 Advanced Mathematical Statistics I
552 Advanced Mathematical Statistics II

**Psychology**
300 Quantitative Methods in Psychology I
510 Intermediate Quantitative Methods in Psychology
517 Small N Designs

**Resource Economics**
576 Econometrics

## Textiles, Clothing, and Related Art (TXC)

*Chairperson:* Associate Professor Helms

**103 Consumer Issues in Textiles and Clothing** *(I and II, 3)* Effect of fibers, yarns, fabrics, and finishes on appearance, performance, and cost. Impact of environmental and consumer safety, labeling, energy conservation, and fashion on the development of textiles, laundry equipment, and detergents. *(Lec. 3)* Helms

**205 Introductory Clothing** *(I and II, 3)* Aesthetic, economic, and managerial aspects of clothing selection and construction. Quality standards applied to construction. Principles of clothing construction developed through programmed learning and individualized projects. *(Lec. 1, Lab. 4)* Weeden

**216 Interior Design I** *(I and II, 3)* Discussions and problems to develop discrimination and creative ability in selection of adequate and well-designed home furnishings. *(Lec. 3)* Higa

**222 Apparel Quality** *(I and II, 3)* Analysis of construction of ready-to-wear, sizing, and quality standards. Influences on the apparel market of designers, consumers, and fashion trends. *(Lec. 3) Pre: sophomore standing and 103.* Staff

**224 Clothing and Human Behavior** *(I and II, 3)* Physical, social, and psychological aspects of dress related to: the individual, cultural and social groups, consumer behavior, clothing needs of special groups, and patterns of change and stability in dress. *(Lec. 3)* Weeden (S)

**238 Textile Design** *(I and II, 3)* Nature, origin, and development of handicraft methods of applying design to textiles, stressing modern applications and utilization of craft techniques. Laboratory experimentation with original creations in various media. *(Lec. 2, Lab. 2)* James

**303 Textile Science** *(I and II, 3)* Current textiles and textile products. Scientific aspects of fibers, yarns, fabrication, and finishes for apparel and home furnishings. Study of existing regulatory controls and policies as they affect the consumer. *(Lec. 2, Lab. 2) Pre: 103 and CHM 124 or permission of instructor.* Scruggs

**305 Intermediate Clothing** *(I and II, 3)* Flat pattern designing with emphasis upon relationship of flat pattern principles to fitting average and problem figures. Application of principles in modifying and executing designs for individual needs. *(Lec. 1, Lab. 4) Pre: 205 or a construction course.* Weeden

**316 Housing Space and Function** *(I, 3)* Fundamental principles of house planning concerning orientation, space relationships, function, flexibility, aesthetic and economic factors. *(Lec. 2, Lab. 2) Pre: 216. In alternate years.* Higa

**322 Fashion Merchandising** *(I and II, 3)* Effect of fashion trends and influences on consumer buying patterns and retailing of fashion merchandising. Responsibilities of retail personnel in purchasing and merchandise of fashion products. *(Lec. 3) Pre: 103.* Risch

**327 Apparel Design** *(I and II, 3)* Design principles as applied to contemporary clothing with emphasis on various age groups and special populations. Laboratory experiences concentrate on the creative process and development of illustrative techniques. *(Lec. 2, Lab. 2)* James

**340 Historic Costume** *(II, 3)* Sociological, economic, religious, and political factors affecting the history of costume and resulting fashion changes; national and folk costumes. Use of department's historic costume collection. *(Lec. 3)* Welters

**348 Fabric Motif Development** *(II, 1)* Experimentation in motif development for surface application to textile products, with emphasis on end-use application of fabric design and specific techniques of reproduction. *(Lec. 1) Pre: 238.* James

**358 Experimental Weaving** *(II, 2)* Introduction to various types of hand weaving emphasizing experimental techniques of fabric formation and structural design, utilizing various substances in handwoven structures. *(Lec. 1, Lab. 2) Pre: 238 or permission of instructor.* James

**361, 362 Special Problems** *(I and II, 1-4 each)* Open to qualified juniors and seniors who wish to do advanced work. Total credits not to exceed 6. *Pre: application must be approved by instructor and department chairperson prior to registration.* Staff

**390 Career Seminar** *(I, 1)* Current professional trends, consideration of experiences in employment and opportunities for graduate study in textiles and clothing. *S/U credit.* Staff

**403 Textile Performance** *(II, 3)* Analysis of textiles using test methods and standards adopted by government, industry, and buyers to insure consumer satisfaction. Interpretation of test data in relation to consumer expectations and performance claims. *(Lec. 2, Lab. 2) Pre: 103 and 303 or permission of instructor.* Scruggs

**405 Advanced Clothing** *(II, 3)* Application of design to dress expressed through draping techniques. Designs draped in fabrics on half- and full-size dress forms. *(Lec. 1, Lab. 4) Pre: 305 or permission of instructor. In alternate years.* Weeden

**416 Interior Design II** *(I and II, 3)* Observation and experience in professional interior design with emphasis on meeting living needs of individuals and groups. Field trips, laboratory applications, and guest lecturers. *(Lec. 2, Lab. 2) Pre: 316 or permission of instructor.* Higa

**422 Field Experience in Fashion Merchandising** *(I and II, 5)* Field experience in business establishment. Students work (150 hr./sem. min.) under qualified personnel and are placed and supervised by University staff. Seminar (1 hr./week) concerning the merchandising of textile and related products is required. *Pre: 303, 322, permission of instructor and adviser. Not for graduate degree program credit.* Risch

**433 Textiles and Clothing Industry** *(II, 3)* Development, production, and distribution of textiles and clothing. Economic aspects of the textile and clothing industry. *(Lec. 3) Pre. 103 and ECN 123 or permission of instructor.* Helms

**440 Historic Textiles** *(I, 3)* Chronological study of textiles, emphasizing socio-economic, religious, and political influences. Contribution of designers, inventors, trade groups, and industrialists. *(Lec. 3) Pre: 103 or permission of department.* Welters

**455 Clothing for Special Needs** *(II, 3)* The therapeutic, rehabilitative, educational, and recreational aspects of clothing. Emphasis on the theory, design, and construction of functional garments for people with special physical, psychological, or social needs. *Pre: senior standing.* Staff

**461, 462 Community Field Work** *(I and II, 1-4 each)* Field work and seminar open to qualified seniors who wish to work in federal or state agencies, community programs, or industry, under the supervision of a faculty adviser. *Pre: application must be approved by instructor and department chairperson prior to registration. Not for graduate credit.* Staff

**502 Seminar in Textiles and Clothing** *(I and II, 3)*
**503 Advanced Textiles** *(I or II, 3)*
**513 Detergency** *(II, 3)*
**524 Social Psychological Aspects of Textiles and Clothing** *(II, 3)*
**533 Textile and Clothing Economics** *(I or II, 3)*
**540 Special Problems in Textiles and Clothing** *(I and II, 3)*
**550 Seminar and Practicum** *(I and II, 3)*
**560 Special Problems in Textiles and Clothing** *(I and II, 3)*
**570 Seminar in Textiles and Clothing Research** *(I and II, 3)*

## Theatre (THE)

*Acting Chairperson:* Professor Klein

**100 Introduction to Theatre** *(I and II, 3)* Designed to provide students with a theoretical and practical understanding of the theatrical process as well as to develop critical standards and increase the enjoyment of theatre as an art. *(Lec. 2, Rec. 1) Not open to theatre majors.* Staff

*The following courses in Theatre Practice offer production and performance training in various areas of dramatic arts. They may be elected concurrently with related theatre courses, or independently. See course descriptions for maximum number of credits which may be elected in each.*

**111 Introduction to Acting** *(I and II, 3 each)* Designed to initiate students to theatre as a collaborative art through systematic exposure to the principles and techniques of acting, directing, stage design, stagecraft, and playwriting. Participation in productions required. *(Studio 6) Pre: permission of instructor.* Staff

**117 Introduction to Voice and Movement** *(I and II, 3)* An exploration of the body and voice as instruments with emphasis on the development of physical and vocal awareness, concentration, maintenance, and endurance. *(Studio 6)* Staff

**161 Introduction to Stagecraft** *(I and II, 3)* Stage carpentry, rigging, properties, scene painting, and light mechanics with practical experience working on productions. *(Lec. 2, Lab. 2)* Galgoczy

**181 Script Analysis** *(I and II, 3)* Analysis of plays from varying perspectives of the actor, director, and designer. Course emphasizes theatre terminology and develops a working vacabulary. *(Lec. 3)* Staff

**205, 206 Developmental Drama** *(I, II, 3)* Principles and techniques of drama as a means of personal and social development. Drama in education and its relationship with group dynamics, role-playing, group therapy, improvization, and psychodrama. *(Lec. 2, Lab. 2) Pre: one theatre course and permission of instructor.* Staff

**211, 212 Basic Acting** *(I and II, 3 each) 211:* Introduction to the theory and basic techniques of acting. Includes improvization, character analysis, voice, and movement. *(Studio 6) Pre: 111, 117 or permission of instructor. 212:* Continuation of 211. *(Studio 6) Pre: 211 and permission of instructor.* Staff

**215 Basic Mime** *(I and II, 2)* Exercises to free the body and develop the skills to express feeling and character through the vocabulary of mime. *(Studio 4) Pre: one theatre course and permission of instructor.* Grando

**216 Intermediate Mime** *(I, II, 2)* Continuation of 215. *(Lab. 4) Pre: 215 and permission of instructor.* Grando

**221 Stage Management and Directing Workshop** *(I, 3)* Theoretical and practical study of the basic methods and procedures of the production staff with emphasis on the director/stage manager relationship and the role of each. Participation in productions required. *(Lec. 2, Lab. 2) Pre: 181.* Staff

**250 Costume Laboratory** *(I and II, 3)* Practical experience in the principles of costuming including drafting theatrical patterns, construction, and finishing techniques, and experience working on theatrical production. *(Studio 6)* Emery

**261, 262 Design Laboratory** *(I, II, 3 each) 261:* Theatre production design with emphasis on development of capabilities for expression in conceptual and graphic terms. Projects in stage scenery, costumes, and lighting. *(Lec. 2, Lab. 2) Pre: 111 or permission of instructor. 262:* Continuation of 261. *(Lec. 2, Lab. 2) Pre: 261.* Staff

**305 Theatre Techniques in Education** *(I and II, 2-4)* Introductory workshop to aid participants discover creative methods to communicate subject content through the use of theatre games, improvisation, and physical exercises. *(Studio 4) Pre: 212 or permission of instructor.* Staff

**311, 312 Intermediate Acting** *(I and II, 4 each) 311:* Continuation of Basic Acting with emphasis on approaches to characterization through improvization and through the analysis and performance of assigned scenes. *(Studio 8) Pre: 211, 212 and permission of instructor. 312:* Continuation of 311. *(Studio 8) Pre: 311 and permission of instructor.* Staff

**321 Orientation to Play Direction** *(I, 3)* Director's role in the process of theatre production. Emphasis on development of production concepts and rehearsal techniques. *(Lec. 2, Lab. 2) Pre: 111 and permission of instructor.* Staff

**322 Play Direction** *(II, 3)* Practical course in play direction. Class functions as a production unit and mounts a season of one-act plays. *(Practicum: minimum of 6 hours per week) Pre: 321 and permission of instructor.* Staff

**331 Playwriting** *(I, 3)* Analysis and evaluation of written material supplemented by play readings and workshop tryouts of students' plays. *(Lec. 3) Pre: 212 or permission of instructor.* Staff

**341 Theatre Management** *(I, 3)* Principles, terminology, and practical techniques of theatre administration. Emphasis on stage management. Assignments will be made to departmental productions. *(Lec. 2, Lab. 2) Pre: 221 and permission of instructor.* Staff

**350 Makeup** *(I, 1)* Principles and techniques of stage makeup. Practical experiences in application through a number of projects in developing character makeups with chiaroscuro, prosthetics and facial hair. *(Studio 2) Pre: permission of instructor.* Emery

**351 Principles and Theories of Theatrical Costuming I** *(I, 3)* Analytical study of fashions, modes and manners in Western civilization as required for modern theatrical production. Greek through the Renaissance. *(Lec. 3) Pre: 250 or permission of instructor.* Emery

**352 Principles and Theories of Theatrical Costuming II** *(II, 3)* Continuation of 351, the Renaissance to the present. *(Lec. 3) Pre: 351 or permission of instructor.* Emery

**355 Stage Costume Design** *(I, 3)* Costume design theories and techniques for modern and period plays in a wide variety of styles. *(Lec. 2, Lab. 2) Pre: 250, 262 or permission of instructor.* Emery

**361 Advanced Stagecrafts** *(II, 3)* Details of mechanical staging systems, the shop as a production unit, modern technological materials and processes. *(Lec. 2, Lab. 2) Pre: 161 or permission of instructor.* Staff

**365 Scene Design I** *(I, 3)* Theories and techniques of scenic design, emphasizing conceptualization and development of stage setting through project designs for various stage forms, production styles, and periods. *(Lec. 2, Lab. 2) Pre: 261, 262 or permission of instructor.* Steinberg

**366 Scene Design II** *(II, 3)* Continuation of 365. *(Lec. 2, Lab. 2) Pre: 261, 262, 365 or permission of instructor.* Staff

**371 Stage Lighting I** *(II, 3)* Theories and techniques of lighting for the stage via a series of design projects emphasizing script analysis and conceptualization, instrumentation, and equipment characteristics, and use of color in stage lighting. *Pre: 261, 262 or permission of instructor.* Staff

**375 Stage Lighting II** *(II, 3)* Continuation of 371. *(Lec. 2, Lab. 2) Pre: 261, 262 or permission of instructor.* Staff

**381 History of Theatre through the Neo-Classical Movement** *(I, 3)* General history of the theatre from its origins through the neo-classical movement. Focuses on the actor, staging, and the audience as they have influenced the development of the theatre and dramatic literature. *(Lec. 3) Pre: permission of instructor.* McCarthy

**382 History of Eighteenth- and Nineteenth-Century Theatre** *(II, 3)* Continuation of 381. *(Lec. 3) Pre: 381 or permission of instructor.* McCarthy

**383 History of the Modern Theatre** *(I, 3)* Modern theatre and drama from approximately 1880 to the present. New European stagecraft and its influence on the development of American theatre. *(Lec. 3) Pre: 381, 382 or permission of instructor.* Staff

**400 Individual Problems in Theatre Studies** *(I and II, 1-3)* Advanced individual theatre work on an approved project under supervi-

sion of a staff member. *Pre: permission of staff. (Max. 6 credits) Not for graduate degree program credit.* Staff

**401 Special Group Studies** *(I and II, 1-3)* Advanced group theatre work in production projects under approval and supervision of a staff member. *Pre: permission of staff. (Max. 6 credits) Not for graduate degree program credit.* Staff

**405 Children's Theatre Laboratory** *(I and II, 2)* Laboratory in which different methods of children's theatre are demonstrated, including use of puppets as a teaching device. Students expected to work with children. *(Studio 4) Pre: 305 or permission of instructor. Not for graduate credit.* Staff

**411, 412 Scene Study** *(I, II, 4 each)* Emphasis on the analysis and interpretation of biweekly assigned scenes representative of the major theatrical genres and styles. *(Studio 8) Not for graduate program credit. Pre: 311, 312 and permission of instructor.* Staff

**413 Special Workshop in Acting** *(I and II, 2)* Techniques related to a specific aspect or style of performance: e.g. masks, puppetry, verse-speaking, and improvization. The study is normally related to a departmental production or special project. *(Studio 4) Not for graduate program credit. May be repeated up to four credits. Pre: 211, 212 or 261, 262 and permission of instructor.* Staff

**415 Professional Internship** *(I or II, 12)* Designed for junior and first semester senior theatre majors who desire a professional experience. This program provides instruction and practical experience in cooperation with a professional theatre. *(Lec. 3, Practicum 9) Not for graduate credit. Minimum of 270 hours practicum.* Staff

**420 Advanced Directing Practice** *(I and II, 1-3)* Special projects for the advanced directing student. Student directors will assume complete production responsibilities for all aspects of their projects, including a critical analysis upon completion. *(Studio 2-6) Pre: 321, 322 or equivalent, junior standing, and permission of department.* Staff

**441 Advanced Theatre Management** *(I and II, 3)* Individual projects of theatre management in a major departmental production or project. *(Lec. 3) Pre: 341 and permission of department. Not for graduate program credit.* Staff

**451 Stage Costume Technology** *(I, 3)* Construction methods and techniques appropriate to stage costuming with emphasis on major theatrical periods and productions. *(Lec. 1, Lab. 2) Pre: 351 or 352 or permission of instructor. Not for graduate program credit. May be taken to a maximum of 6 credits.* Emery

**455 Advanced Costuming** *(I and II, 1-3)* Individual projects in costume design for studio or major productions. Styles and theory related to projects; costume sketches and construction. *(Studio 2-6) Pre: 355 and permission of instructor.* Emery

**461 Advanced Theatre Technology** *(I and II, 1-3)* Advanced projects in technical theatre suggested by qualified students or developed by students with members of department staff. *Not for graduate credit. (Studio 2-6) Pre: 161 or permission of instructor.* Steinberg

**463 Special Workshop in Design and Technical Theatre** *(I and II, 3)* Techniques related to a specific aspect or style of production: e.g. masks, puppetry, wig-making, sound effects, projections, properties. Normally related to a departmental production or special project. *(Lab. 6) Not for graduate program credit. May be repeated up to six credits. Pre: 261, 262 and permission of instructor.* Staff

**465 Advanced Scene Design** *(I and II, 1-3)* Individual projects in designing scenery for studio and major productions. *(Studio 2-6) Pre: 161, 365, and permission of instructor.* Staff

**475 Advanced Stage Lighting** *(I and II, 1-3)* Individual projects in lighting design and control for studio and major productions. *(Studio 2-6) Pre: 371, and permission of department. Not for graduate program credit.* Staff

**481 American Theatre History** *(II, 3)* Origins and development of American theatre from the wilderness to Broadway of 1940's including the evolution of the musical play. Analysis of special contributions made by the grassroots movement, the university theatres, the Federal Theatre Project. *(Seminar 3) Pre: 381, 382 or permission of instructor. Not for graduate program credit.* McCarthy

**483 Aesthetics and Criticism of the Theatre** *(I, 3)* Designed to familiarize students with outstanding works of dramatic theory and to give them the opportunity to develop and articulate their critical thinking about the theatre. *(Lec. 3) Not for graduate program credit. Pre: 381, 382, 383, ENG 454 or permission of instructor.* Staff

**484 Special Research Project** *(I and II, 3)* An in-depth study of a single critical or historical aspect of theatre. The subject is normally related to a departmental production. *(Lec. 2, Lab. 2) Not for graduate program credit. Pre: permission of instructor. May be repeated once.* Staff

## University Year for Action Internship Program (UYA)

*Director:* Assistant Professor Roughton

**301, 302 Field Experience I, II** *(I and II, 3-12 each)* Field experience gained at placement site through participation in the UYA program. The experience will be defined by a job description and learning contract arranged by the UYA director between the student intern, the intern's faculty adviser, and the relevant agency supervisor. *Pre: junior or senior standing, participation in the UYA program, and permission of a faculty adviser. May be repeated once for a total of 24 credits. S/U credit.* Staff

**303, 304 Colloquium I, II** *(I and II, 3 each)* Seminar format. Discussions of issues and problems raised by internship experiences in public service agencies. *Pre: concurrent registration in 301 for 303, and 302 for 304. Required for and open only to students enrolled in the UYA Student Internship Program. S/U credit.* Roughton

## Urban Affairs (URB)

*Chairperson:* Assistant Professor Krausse

**210 Introduction to Urban Affairs** *(I or II, 3)* Introductory course for students planning to concentrate in the Urban Affairs Program. Investigation of the interdisciplinary approach in analyzing urban issues, potentials and problems. *(Lec. 3)* Staff

**391, 392 Directed Study** *(I and II, 1-3 each)* Independent work in urban affairs for individual students or groups. *Pre: 210.* Staff

**397 Field Work in Urban Affairs** *(I and II, 0-12)* Field work as arranged. The student works as a part- or full-time worker in an urban affairs agency, under the supervision of a faculty adviser. *Pre: 210 and two common-core courses or equivalent.* Staff

**498, 499 Urban Affairs Senior Seminar** *(I and II, 3 each)* The study of a particular urban issue from an interdisciplinary perspective. Required of all urban affairs concentrators. *Pre: 210 or permission of instructor; junior or senior standing. Not for graduate credit.* Staff

## Women's Studies (WMS)

*Coordinator:* Associate Professor Strom

**200 Introduction to Women's Studies** *(I or II, 3)* Images of women in American culture, the theories and processes of socialization, historical perspectives, and implications for social change. *(Lec. 2, Rec. 1)* Staff

**300 Field Experience in Women's Studies** *(I and II, 3)* Supervised field work allowing students to learn through direct personal experience about the background, problems, and concerns of particular populations of women. *(Lec. 1, Lab. 4) Pre: 200 and approval of adviser.* Staff

**400 Senior Seminar** *(I or II, 3)* Theoretical and value questions of Women's Studies research; general introduction to research methods; research methods in selected disciplines; personal and professional readiness. *Not for graduate credit. Pre: 200, senior standing.* Staff

## Writing (WRT)

*Director:* Associate Professor Swan

**001 Basic Writing Skills** *(SS, 0)* Intensive study of grammar, punctuation, sentence formation, and other conventions of standard written English. Designed primarily for students whose basic skills in written communication are deficient. Swan and Staff

**002 Writing Lab.** *(I and II, 0)* Intensive study of grammar, punctuation, sentence formation, and paragraph skills. Operates on individual tutorial basis. Students may be referred. Staff

**101 Composition I** *(I and II, 3)* Writing instruction and practice directed toward the development of ability and assurance in the organization of ideas and the use of language. Emphasizes correctness and clear presentation. *Not a prerequisite for 102. Not for English concentration credit.* Staff (Cw)

**102 Composition II** *(I and II, 3)* Emphasizes rhetorical and stylistic skills which depend on selection and organization of evidence, coherence, and language skills. Expository models are provided and selected readings accompany the writing assignments. *Not for English concentration credit.* Staff (Cw)

**112 English as a Second Language I** *(I and II, 3)* Equivalent to 101, but restricted to students whose mother tongue is not English who have need of special assistance in expressing themselves in English. Intermediate level. R.H. Tutt, Martin, Swan (Cw)

**122 English as a Second Language II** *(I and II, 3)* Continuation of 112 for foreign students demonstrating need. Advanced level. R.H. Tutt, Swan (Cw)

**123 College Writing for Returning Students** *(I and II CCE, 3)* College-level readings and discussions as a basis for instruction and practice in specific types of written work required in college courses. *For students who are beginning degree study after a separation from formal education of at least three years. Not open to students who have earned credit for WRT 102 or BGS 100.* Staff (Cw)

**300 Advanced Expository Writing** *(I and II, 3)* Instruction in expository writing in the various content areas related to students' interests. Exploration of various styles in research writing. Competence in the basic skills required. Martin and Shamoon (Cw)

**333 Scientific and Technical Writing** *(I and II, 3)* Practice in specific forms of writing in the scientific and technical fields. Basic skills required. Vaughn (Cw)

**435 (or EDC 435) The Teaching of Composition** *(I and II, 3)* Philosophy, materials, and methods underlying the teaching of writing with emphasis on current approaches including the application of linguistics. Offers practice in writing workshop techniques, marking, constructing assignment sequences, and individualized instruction. *(Seminar) Pre: junior standing or permission of instructor.* Swan

## Zoology (ZOO)

*Chairperson:* Professor Wilde

**111 General Zoology** *(I and II, 4)* Physiology, development, genetics, ecology, and study of types of animals, with emphasis on evolution. Introduction to further studies in zoology for both potential professional and non-professional students. *(Lec. 3, Lab. 2) Not open to students who have passed BIO 102.* Heppner (N)

**121 Human Anatomy** *(I and II, 4)* Elementary anatomy of the organ systems, studied with the aid of charts, models, and dissection of the cat. *(Lec. 2, Lab. 4) Limited to students in physical education, dental hygiene, nursing, pharmacy, and respiratory therapy.* Bibb

**221 Chordate Anatomy** *(I, 4)* Functional anatomy of chordates, including a consideration of the genesis of principal organ systems. Laboratory consists of detailed integrated study of selected chordate forms. *(Lec. 2, Lab. 4) Pre: one year of biology.* Goertemiller

**242 Introductory Human Physiology** *(I and II, 3)* Functions of the organ systems of the human body and their coordination in the whole human organism. Attention is given to the needs of students preparing for health-related professions. *(Lec. 3) Not for major credit in B.S. Zoology. Pre: 111 or 121 or BIO 102.* Foresman

**244 Introductory Human Physiology Laboratory** *(I and II, 1)* Mechanisms of physiological processes are illustrated by experiments on vertebrate animals. *(Lab. 3) Pre: prior or concurrent enrollment in 242. Not open to students who have passed 442.* Foresman

**252 Human Genetics and Society** *(SS, 3)* Human heredity and its individual and social implications. *(Lec. 3) Pre: one semester of biology or permission of instructor.* Costantino

**254 Invertebrate Zoology** *(II, 4)* Representative types of invertebrate animals, laboratory dissections, observations, and experiments. Occasional field trips. Lectures emphasizing progressive specialization of structure and function. *(Lec. 2, Lab. 4) Pre: one semester in zoology.* Bullock

**262 (or BOT 262) Introductory Ecology** *(I and II, 3)* Structure and function of ecosystems limiting factors, population dynamics, population interactions, and community relationships. Selected habitats and general ecological effects of man. *(Lec. 3) Pre: BIO 101, 102 or BOT 111 and ZOO 111 or equivalent.* Hairston, Harlin, Killingbeck, Shoop and Staff.

**264 Introduction to the Biology of the Seashore** *(SS, 3)* Lectures, laboratories, and field trips dealing with major marine groups: their morphology, life history, physiology, and ecology. Emphasis on ecological relationships and adaptations to environmental factors, laboratory is field-oriented. *(Lec. 2, Lab. 3) Pre: BIO 101 and 102.*

**266 Vertebrate Natural History** *(SS, 3)* Identification and life histories of regional vertebrate fauna. Techniques of field identification. Characteristics of vertebrate groups. *Pre: BIO 101 and 102. Not open to students who have taken 466.* Staff

**286 Insects, Humans, and Disease** *(II, 3)* Role of insects, ticks, and mites as vectors and as direct agents of diseases in humans; factors affecting the spread of these diseases and their role in our cultural development. *(Lec. 3) Pre: BIO 102 or ZOO 111. Not for major credit.* Hyland

**316 Principles of Development** *(II, 4)* A treatment of embryology emphasizing experimentally derived principles which underlie development. *(Lec. 2, Lab. 4) Pre: one semester of biology. BOT 352 and ZOO 345 are recommended.* Bibb

**323 Cells and Tissues** *(II, 2)* Microanatomy of normal cells and tissues, and structural and functional relationships among tissue components within an organism. Emphasis on vertebrates. *(Lec. 2) Pre: 111 or BIO 102, and one semester of chemistry. In alternate years. Next offered 1982.* Goertemiller

**325 Histological Techniques** *(II, 2)* Modern techniques for preparing histological, cytological, and embryological specimens for microscopical study. Histochemistry for use in light microscopy, and introduction to radioautography and electron microscopy are included. *(Lab. 4) Pre: 111 or BIO 102, one semester of chemistry and prior or concurrent registration in 323. In alternate years. Next offered 1982.* Goertemiller

**331 Parasitology** *(I, 3)* Structure, life cycles, ecology, and economic relationships of the parasitic protozoa, helminths, and arthropods. Origin and biological significance of parasitism and host-parasite relationships. Encompasses experimental laboratory work on life cycles of selected species and collection and identification of local parasitic forms including those from the marine fauna. *(Lec. 2, Lab. 3) Pre: two semesters of biology.* Hyland

**343 Physiology of Exercise** *(I, 3)* Applied human physiology, with applications to work, health, physical education, and athletic sports. Particular attention to adjustments of the circulatory and respiratory systems during physical activity. *(Lec. 2, Lab. 3) Pre: 242 or 345.* Rivera

**345 Basic Animal Physiology** *(I, 3)* Fundamental physiological processes of animals with emphasis on homeostatic mechanisms. Nature of osmosis, membranes, water and electrolyte balance, irritability, and the functioning of selected organ systems. *(Lec. 2, Lab. 3) Pre: one semester in natural science, 221 and one semester in chemistry are recommended. Not open to students who have passed 242.* Kass-Simon

**355 Marine Invertebrates of Southern New England** *(SS, 3)* Collection, identification, and preparation of marine invertebrates of southern New England. Emphasis on fieldwork and preparation of specimens for scientific study. *(Lab. 6) Pre: 254 or permission of instructor.* Bullock

**373 History of Biology**
See History 373.

**381 Introductory Entomology**
See Plant Pathology-Entomology 381.

**382 Introductory Entomology Lab**
See Plant Pathology-Entomology 382.

**391, 392 Assigned Work** *(I and II, 1-3 each)* Advanced undergraduate work in anatomy, endocrinology, physiology, histology, embryology, entomology, taxonomy, ecology, marine biology, and related subjects. Individual or group work by prior written arrangement with a staff member and with permission of department chairperson. Staff

**395 Seminar in Zoology** *(I and II, 1)* Introduction to sources of zoological literature. Presentation of reports of scientific papers by students, with discussion by the class. *(Lec. 1) Pre: junior standing and three courses in zoology. Required of seniors majoring in zoology.* Wilde

**410 Introduction to Protistology**
See Microbiology 410.

**427 Modeling and Analysis of Dynamic Systems**
See Mechanical Engineering 427.

**441 General (Cellular) Physiology** *(I, 3)* Fundamental processes occurring in living matter, especially functions at the cellular level with emphasis on biochemical and biophysical bases of functions common to all forms of life. *(Lec. 2, Lab. 3) Pre: two semesters of biology, one of which may be MIC 211, two semesters of physics and one semester of organic chemistry.* Hammen

**442 Mammalian Physiology** *(II, 3)* Intensive study of the physiological mechanisms that regulate the animal body and its organ systems. Emphasis on knowledge obtained from experimental mammalian and human physiology. Laboratory experiments on vertebrate animals. *(Lec. 2, Lab. 3) Pre: 345 or 441, 221 recommended.* Hill

**455 (or BOT 455) Marine Ecology** *(I, 3)* Investigation of the structure and dynamics of various marine ecosystems. Includes mineral cycling, energy flow, community and population organization, and behavioral ecology in selected marine environments. *(Lec. 3) Pre: 262 or permission of instructors. In alternate years, next offered 1982-83.* Cobb and Harlin

**457 (or BOT 457) Marine Ecology Laboratory** *(I, 1)* Field and laboratory work on community relationships of dominant organisms in Rhode Island marine environments. *(Lab. 3) Pre: concurrent enrollment in 455 and permission of instructors. Limited to 15 students. In alternate years, next offered 1982-83.* Cobb and Harlin

**460 Advanced Population Biology** *(II, 3)* An extension of the seminal views of Fisher, Wright, Haldane, Volterra, and Lotka on the biology of populations, especially in the areas of genetics, ecology, and demography. *(Lec. 3) Pre: 363, MTH 141 and 142.* Costantino

**463 Animal Ecology** *(II, 3)* Roles of animals in the structure and function of ecosystems. Adaptations of animals to their environments and effects of limiting factors. Analysis of animal populations and communities. Statistical techniques. Readings in primary source materials, laboratory, and field studies. *(Lec. 2, Lab. 3) Pre: 262 and MTH 141 or equivalent.* Shoop

**465 Limnology** *(I, 4)* The study of continental waters. Emphasis on ponds and lakes, including uptake kinetics, population biology and community structure of lacustrine organisms, as well as physical and chemical properties of fresh water. *(Lec. 3, Lab. 3) Pre: 262 and one semester of chemistry.* Hairston

**466 Vertebrate Biology** *(II, 3)* Life histories, adaptations, ecology, classifications, and distribution of vertebrate animals. Laboratory and extensive field work on local vertebrates. *(Lec. 2, Lab. 3) Pre: 262 and 321 recommended.* Chipman

**467 Animal Behavior** *(II, 3)* Ethology and sociobiology of animals. Topics in the control and development of behavior patterns, orientation in time and space, social behavior, and behavioral ecology. *(Lec. 2, Lab. 3) Pre: two semesters of zoology; 262 recommended.* Cobb

**475 Causes of Evolution** *(I, 3)* A mathematical formulation of evolution: epoch of enzymes; genetic equilibrium under selection, mutation, migration, and random drift; the n-locus problem; coupling of genetic and ecological systems. *(Lec. 3) Pre: one semester of genetics.* Costantino

**476 Human Genetics** *(II, 3)* Degree and mode of inheritance of physical and mental variations of man which have been shown to have at least some genetic basis. A term paper is required. *(Lec. 3) Pre: BOT 352 (ASC 352) or equivalent. Not offered in 1982-83.* Staff

**501 Systematic Zoology** *(I, 3)*
**505 Biological Photography** *(I, 2)*
**508 Seminar in Zoological Literature** *(II, 1)*
**510 (or MIC 510) Cell and Developmental Biology of the Motile Protista** *(II, 2)*
**512 Fine Structure** *(II, 4)*
**518 Mechanisms of Development** *(I, 2)*
**521 (or MIC 521) Recent Advances in Cell Biology** *(I, 1)*
**531 Advanced Parasitology Seminar** *(II, 2)*
**541, 542 Comparative Physiology** *(I and II, 3 each)*
**543 Biology of Reproduction in Animals** *(I, 3)*
**545 Endocrinology** *(I, 3)*
**548 Neurophysiology** *(II, 4)*
**549 Advanced Topics in Neurophysiology** *(II, 3)*
**554 Seminar in Morphogenetic Theory** *(II, 2)*
**561 Behavioral Ecology** *(I, 3)*
**562 Seminar in Behavioral Ecology** *(I, 1)*
**563 Ichthyology** *(I, 3)*
**564 Oceanic Ichthyology** *(II, 3)*
**565 Mammalogy** *(II, 3)*
**566 Herpetology** *(II, 3)*
**568 Ornithology** *(II, 2)*
**569 Vertebrate Field Study** *(II, 3-4)*
**573 Developmental Genetics** *(I, 3)*
**576 Ecological Genetics** *(II, 4)*
**579 (or BOT 579) Advanced Genetics Seminar** *(I and II, 1)*
**581 General Acarology** *(I, 3)*
**586 Medical and Veterinary Entomology** *(II, 3)*

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Mairs, Kenneth H., Met. E., *Professor of Metallurgy*
Mathewson, John A., M.Sc., *Associate Professor of Zoology*
Miller, Clarence Edmund, M.S., *Professor of Geology*
Mohrnheim, Anton Franz, Dr.-Ing., *Professor of Metallurgy*
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Moultrop, Kendall, M.S., *Professor of Civil Engineering*
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Peck, Austin, J.D., *Associate Professor of Business Law*
Pelton, Frank M., Ph.D., *Professor of Education*
Pitterman, Marvin, Ph.D., *Professor of Finance and Insurance*
Pratt, David Mariotti, Ph.D., *Professor of Oceanography*
Rife, S. Marvin, Ph.D., *Professor of Education*
Robinson, E. Arthur, Ph.D., *Professor of English*
Rubinsky, Stanley, M.M.E., *Professor of Industrial Engineering*
Russell, Thomas G., B.S., *Associate Professor of Physical Education for Men*
Ryan, Lorraine D., M.A., *Associate Professor of English*
Sabatino, Richard A., Ph.D., *Professor of Economics*
Salomon, Milton, Ph.D., *Professor of Food and Resource Chemistry*
Sanderson, Brooks Aymor, Ed.D., *Professor of Accounting*
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Stone, Leslie R., M.S., *Professor of Physics*
Stuart, Homer O., M.S., *Director of Agricultural and Home Economics Extension*
Stuckey, Irene Hawkins, Ph.D., *Professor of Plant Physiology*
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Will, Robert Ellsworth, M.A., *Professor of Speech and Theatre*
Woods, Frank L., Ph.D., *Dean of the Summer Session and Professor of German and Linguistics*
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## Faculty

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Conway, Roger L., *Director of Memorial Union and Student Activities, Adjunct Professor of Human Development, Counseling and Family Studies, 1974.* M.A., 1969, University of Rhode Island.

Cook, David O., *Adjunct Professor of Oceanography, 1981.* Ph.D., 1969, University of Southern California.

Cooper, George N., *Adjunct Assistant Professor of Electrical Engineering, 1974.* M.D., 1961, Seton Hall College of Medicine.

Crafts, Roger C., Jr., *Dean of Student Life and Adjunct Associate Professor of Human Development, Counseling and Family Studies, 1974, 1973.* Ed.D., 1973, Indiana University.

Danish, Michele, *Adjunct Assistant Professor (Clinical) of Pharmacy, 1978.* Pharm.D., 1974, State University of New York, Buffalo.

Danskin, John M., *Adjunct Professor of Mathematics, 1977.* Ph.D., 1947, University of California, Berkeley.

Dardiri, Ahmed H., *Adjunct Professor of Animal Pathology, 1968.* M.V.S., 1945, Cairo Veterinary College; Ph.D., 1950, Michigan State University.

Davidson, Kenneth M., *Adjunct Associate Professor, Institute of Human Science and Services, 1981.* LL.M., 1967, Yale University Law School.

Dexter, Daniel L., *Adjunct Assistant Professor of Pharmacology and Toxicology, 1979.* Ph.D., 1972, University of Wisconsin.

DiMeglio, A. Francis, *Adjunct Associate Professor of Nuclear Engineering, 1965.* B.S., 1952, Providence College.

DiNapoli, Frederick R., *Adjunct Associate Professor of Mathematics, 1979, 1970.* Ph.D., 1969, University of Rhode Island.

Dougall, Donald Keir, *Adjunct Professor of Botany, 1975.* Ph.D., 1956, University of Oxford.

Douglas, William Henry James, *Adjunct Associate Professor of Biochemistry, 1975.* Ph.D., 1970, Brown University.

Dufour, Alfred Paul, *Adjunct Associate Professor of Microbiology, 1981, 1977.* Ph.D., 1975, University of Rhode Island.

Dunlap, Richard M., *Adjunct Professor of Mechanical Engineering and Applied Mechanics, 1979.* M.S., 1941, Massachusetts Institute of Technology.

Edwards, Robert L., *Adjunct Professor of Oceanography, 1981.* Ph.D., 1951, Harvard University.

Eisler, Ronald, *Adjunct Professor of Oceanography, 1970.* Ph.D., 1961, University of Washington.

Elmgren, S. Ragnar, *Adjunct Professor of Oceanography, 1978.* Ph.D., 1976, University of Stockholm.

Ennis, Herbert Leo, *Adjunct Professor of Microbiology, 1980.* Ph.D., 1975, Northwestern University.

Erickson, Bette LaSere, *Adjunct Assistant Professor of Psychology, 1981.* Ed.D., 1976, University of Massachusetts.

Erickson, Stephen B., *Adjunct Assistant Professor of Speech Communication, 1978.* J.D., 1976, Boston University School of Law.

Fielding, Stuart, *Adjunct Associate Professor of Pharmacology and Toxiology, 1980.* Ph.D., 1968, University of Delaware.

Ford, Donald L., *Adjunct Professor of Health Sciences, 1979.* R.N., 1948, Alexian Hospital School of Nursing, B.Sc.N., 1952, DePaul University.

Franzel, E. Grace, *Adjunct Assistant Professor of Psychology, 1980.* Ph.D., 1979, Colorado State University.

Friedman, Fredric Carl, *Adjunct Assistant Professor of Psychology, 1981.* Ed.D., 1977, Boston University.

Fuller, George C., *Adjunct Professor of Pharmacology and Toxicology, 1980.* Ph.D., 1967, Purdue University.

Gearing, Juanita, *Adjunct Professor of Oceanography, 1980.* Ph.D., 1973, University of Texas, Austin.

Giambalvo, Cecilia T., *Adjunct Assistant Professor of Pharmacology and Toxicology, 1979.* Ph.D., 1975, University of Connecticut.

Gibbs, Robert H., *Adjunct Professor of Zoology, 1971.* Ph.D., 1955, Cornell University.

Goetze, Gerhard W., *Adjunct Professor of Electrical Engineering, 1969.* Ph.D., 1958, University of Marburg.

Groden, Gerald, *Adjunct Associate Professor of Psychology, 1981.* Ph.D., 1963, Purdue University.

Groden, June, *Adjunct Instructor in Psychology, 1981.* M.A., 1980, Boston College.

Grosslein, Marvin D., *Adjunct Professor of Oceanography, 1979.* Ph.D., 1962, Cornell University.

Guthrie, James, *Adjunct Professor of Human Development, Counseling and Family Studies, 1973.* M.D., 1948, New York University.

Haier, Richard J., *Adjunct Assistant Professor of Pharmacy, 1980.* Ph.D., 1975, The Johns Hopkins University.

Hall, James A., *Adjunct Professor of Electrical Engineering, 1973.* Ph.D., 1971, University of Rhode Island.

Halvorson, William L., *Adjunct Professor of Botany, 1978.* Ph.D., 1970, Arizona State University.

Heath, Ross G., *Adjunct Professor of Oceanography, 1978.* Ph.D., 1968, Scripps Institution of Oceanography.

Hennemuth, Richard C., *Adjunct Professor of Oceanography, 1981.* M.S., 1954, Iowa State University.

Hirsch, Steven J., *Adjunct Assistant Professor of Psychology, 1981.* Ph.D., 1979, California School of Professional Psychology.

Howe, Jeffrey L., *Adjunct Assistant Professor of Food Science, Technology, Nutrition, and Dietetics, 1979.* M.S., 1972, University of Massachusetts.

Imbrie, John, *Adjunct Professor of Oceanography, 1976.* Ph.D., 1951, Yale University.

Imig, David Gregg, *Adjunct Associate Professor, Institute of Human Science and Services, 1981.* Ph.D., 1969, University of Illinois.

Jahan-Parwar, Behrus, *Adjunct Professor of Zoology, 1980.* M.D., 1964, D.Sc., 1965, University of Gottingen.

Jackim, Eugene, *Adjunct Assistant Professor of Pharmacology and Toxicology, 1980.* Ph.D., 1965, St. John's University.

Johnson, Douglas, *Adjunct Associate Professor of Community Planning, 1980.* M.C.P., 1971, University of Rhode Island.

Kanig, Joseph L., *Adjunct Professor of Pharmacy, 1981.* Ph.D., 1960, New York University.

Kaplan, Arthur M., *Adjunct Professor of Plant Pathology-Entomology, 1969.* Ph.D., 1948, University of Massachusetts.

Kaplan, Henry G., *Adjunct Assistant Professor of Pharmacy, 1979.* M.D., 1972, University of Rochester.

Kaplan, Stephen R., M.D., *Adjunct Associate Professor of Pharmacology and Toxicology, 1977.* M.D., 1963, New York University College of Medicine.

Karkalas, Yani, *Adjunct Professor of Pharmacology-Toxicology and Psychology, 1970, 1969.* M.D., 1953, University of Istanbul.

Karlson, Karl E., *Adjunct Professor of Electrical Engineering, 1974.* M.D., 1945, Ph.D., 1952, University of Minnesota.

Katayama, Teruhisa, *Adjunct Professor of Food Science, Technology, Nutrition, and Dietetics, 1979.* Ph.D., 1949, University of Kyushu, Japan.

Katzoff, Richard G., *Director of Student Services, College of Continuing Education, and Adjunct Assistant Professor of Human Development, Counseling and Family Studies, 1977, 1976.* M.S., 1975, Central Connecticut State College.

Kavarnos, George J., *Adjunct Professor of Chemistry, 1978.* Ph.D., 1968, University of Rhode Island.

Kazan, Benjamin, *Adjunct Professor of Electrical Engineering, 1969.* Ph.D., 1961, Techische Hochschule, Germany.

Khan, Mushtaq Ahmad, *Adjunct Assistant Professor of Pharmacology and Toxicology, 1980.* Ph.D., 1968, Washington State University.

Klyberg, Albert T., *Adjunct Associate Professor of History, 1977, 1976.* Ph.D., 1967, University of Michigan.

Knott, J. Eugene, *Adjunct Associate Professor of Psychology and Human Development, Counseling and Family Studies, 1981, 1975.* Ph.D., 1974, University of Maryland.

Lal, Harbans, *Adjunct Professor of Pharmacology, Toxicology, and Psychology, 1981.* Ph.D., 1962, University of Chicago.

Leco, Armand P., *Adjunct Professor of Health Care Administration, 1978.* B.S., 1947, Providence College.

Levin, Morris A., *Adjunct Associate Professor of Civil and Environmental Engineering, 1974.* Ph.D., 1970, University of Rhode Island.

Lions, Jean-Claude, *Adjunct Professor of Zoology, 1981.* Doc. d'Etat es Sciences, 1972, Marseille.

Liu, Oscar Chum, *Adjunct Professor of Animal Pathology, 1965.* M.D., 1943, Cheeloo University; D.M.Sc., 1952, University of Pennsylvania.

Long, Nicholas Trott, *Adjunct Assistant Professor of Geography and Marine Affairs, and General Counsel, 1981, 1979.* J.D., 1972, Columbia Law School.

Lundgren, Raymond G., Jr., *Adjunct Associate Professor of Pharmacology and Toxicology, 1975.* Ph.D., 1963, University of Missouri.

Malcolm, Alexander R., Jr., *Adjunct Assistant Professor of Pharmacology and Toxicology, 1979.* Ph.D., 1977, University of Rhode Island.

Marr, Frank N., Jr., *Adjunct Assistant Professor (Clinical) of Pharmacy, 1979.* Pharm.D., 1976, Duquesne University.

Mayer, Larry A., *Adjunct Professor of Ocean Engineering, 1981.* Ph.D., 1979, University of California.

McClain, John W., Jr., *Adjunct Assistant Professor, Institute of Human Science and Services, 1980.* M.S.W., 1972, Boston College.

McCullough, William V., *Adjunct Assistant Professor of Electrical Engineering, 1977.* Ph.D., 1976, University of Rhode Island.

Mendelsohn, Robert, *Adjunct Assistant Professor of Psychology, 1980.* Ph.D., 1979, Florida State University.

Messier, Richard H., *Adjunct Assistant Professor of Mechanical Engineering and Applied Mechanics, 1977.* Ph.D., 1975, Brown University.

Middleton, David, *Adjunct Professor of Electrical Engineering, 1970, 1966.* Ph.D., 1947, Harvard University.

Miller, Donald C., *Adjunct Professor of Zoology, 1979, 1975.* Ph.D., 1965, Duke University.

Miller, Eugene, *Adjunct Assistant Professor of Pharmacology and Toxicology, 1970.* Ph.D., 1967, University of Chicago.

Modest, Edward J., *Adjunct Professor of Medicinal Chemistry, 1971, 1968.* Ph.D., 1949, Harvard University.

Moffett, Mark B., *Adjunct Associate Professor of Ocean Engineering, 1974, 1970.* Ph.D., 1970, Brown University.

Monti, Peter, *Adjunct Assistant Professor of Psychology, 1977.* Ph.D., 1974, University of Rhode Island.

Morris, David J., *Adjunct Professor of Biochemistry and Biophysics, 1980.* Ph.D., 1963, Dyson Perrins Organic Chem. Lab.

Most, Albert S., *Adjunct Assistant Professor of Electrical Engineering, 1974.* M.D., 1962, The Johns Hopkins University.

Mulick, Richard, *Adjunct Assistant Professor of Psychology, 1979.* Ph.D., 1975, University of Vermont.

Nakanishi, Koji, *Adjunct Professor of Pharmacognosy, 1974.* Ph.D., 1954, Nagoya University.

Olson, David G., *Adjunct Associate Professor of Industrial Engineering, 1980.* Ph.D., 1971, Northwestern University.

Osgood, Charles F., *Adjunct Professor of Mathematics, 1980.* Ph.D., 1964, University of California, Berkeley.

Owen, Albert J., *Adjunct Assistant Professor of Biochemistry, 1978.* Ph.D., 1974, Harvard University.

Pagliarini, John A., *Adjunct Instructor in Pharmacy Administration, 1978.* B.S., 1964, University of Rhode Island.

Palmatier, Jay Richard, *Adjunct Assistant Professor of Psychology, 1981.* Ph.D., 1980, University of Montana.

Paolino, Ronald M., *Adjunct Associate Professor of Psychology, 1981.* Ph.D., 1963, Purdue University.

Patton, Alexander J., *Adjunct Assistant Professor of Mechanical Engineering and Applied Mechanics, 1977.* Ph.D., 1972, University of Rhode Island.

Phelps, Donald K., *Adjunct Assistant Professor of Oceanography, 1969.* Ph.D., 1964, University of Rhode Island.

Pogacar, Srecko J., *Adjunct Associate Professor of Pharmacology, 1969.* M.D., 1953, University of Ljubljana.

Pomerleau, Ovide F., *Adjunct Professor of Psychology, 1981.* Ph.D., 1969, Columbia University.

Prager, Jan C., *Adjunct Associate Professor of Microbiology, 1967.* Ph.D., 1961, New York University.

Rentsch, Samuel B., Jr., *Adjunct Professor of Ocean Engineering, 1980.* M.D., 1954, Medical College of Virginia.

Richardson, Roger, *Adjunct Associate Professor of Psychology, 1979.* Ph.D., 1967, Louisiana State University.

Rubin, Alvin F., *Adjunct Assistant Professor of Gerontology, 1980.* M.S., 1958, Yeshiva University.

Sahagian, Charles S., *Adjunct Assistant Professor of Chemical Engineering, 1970.* B.S., 1950, Boston College.

Salvatore, Santo, *Adjunct Assistant Professor of Psychology, 1981.* Ph.D., 1974, Brown University.

Schmidt, Alfred O., *Adjunct Professor of Industrial Engineering, 1975.* D.Sc., 1943, University of Michigan.

Schneider, Eric, *Adjunct Professor of Oceanography, 1974.* Ph.D., 1969, Columbia University.

Schwartz, Joseph B., *Adjunct Associate Professor of Pharmacy, 1976.* Ph.D., 1967, University of Michigan.

Sherman, Charles H., *Adjunct Associate Professor of Ocean Engineering, 1974.* Ph.D., 1962, University of Connecticut.

Sherman, Kenneth, *Adjunct Professor of Oceanography, 1977.* M.S., 1959, University of Rhode Island.

Shonting, David H., *Adjunct Professor of Oceanography, 1975.* Sc.D., 1966, Massachusetts Institute of Technology.

Siino, Frederick A., *Adjunct Professor of Environmental Health Science, 1981.* M.S., 1952, University of Massachusetts.

Silverman, Gerald, *Adjunct Professor of Food and Nutritional Science, 1969.* Ph.D., 1954, Cornell University.

Simmons, Emory G., *Adjunct Professor of Botany, 1972.* Ph.D., 1950, University of Michigan.

Sindermann, Carl J., *Adjunct Professor of Oceanography, 1981.* Ph.D., Harvard University.
Sissenwine, Michael P., *Adjunct Professor of Oceanography, 1981.* Ph.D., 1975, University of Rhode Island; Certificate, 1977, Princeton University.
Skud, Bernard E., *Adjunct Professor of Oceanography, 1981.* M.S., 1950, University of Michigan.
Smith, James R., *Adjunct Associate Professor of Pharmacology and Toxicology, 1976.* Ph.D., 1970, Yale University.
Soltz, Gerald, *Adjunct Professor of Chemical and Ocean Engineering, 1972.* Ph.D., 1966, Manchester University, England.
Spano, Leo A., *Adjunct Assistant Professor of Chemical Engineering, 1967.* M.S., 1948, University of Rhode Island.
Spitzform, Marianne, *Adjunct Assistant Professor of Psychology, 1981.* Ph.D., 1978, University of Montana.
Stevenson, David K., *Adjunct Professor of Oceanography, 1981.* Ph.D., 1976, University of Rhode Island.
Stockwell, Samuel R., *Adjunct Assistant Professor of Psychology, 1980.* Ph.D., 1979, Purdue University.
Sylvia, J. Gerin, *Adjunct Special Lecturer in Industrial Engineering, 1980.* M.Ed., 1969, Northeastern University.
Taylor, William R., *Adjunct Associate Professor of Food Science, Technology, Nutrition and Dietetics, 1980, 1960.*
Tenore, Kenneth R., *Adjunct Professor of Oceanography, 1976.* Ph.D., 1970, North Carolina State University.
Thomas, Carol J., *Adjunct Professor of Community Planning and Area Development, 1971.* M.S., 1948, University of Connecticut.
Tierney, Timothy, *Adjunct Assistant Professor of Education, 1981.* M.A., 1976, University of Rhode Island.
Turner, Michael D., M.D., *Adjunct Professor of Pharmacology and Toxicology, 1979.* M.D., 1950, University of Bristol, England; Ph.D., 1964, University of Rochester, New York.
Verrier, Richard L., *Adjunct Assistant Professor of Pharmacology and Toxicology, 1976.* Ph.D., 1969, University of Virginia.
Vidins, Eva I., M.D., *Adjunct Associate Professor of Pharmacology and Toxicology, 1977.* M.D., 1966, University of Toronto.
Villatico, Alfred V., *Adjunct Assistant Professor of Pharmacology and Toxicology, 1979.* B.S., 1942, University of Rhode Island.
Walsh, Alexander H., *Adjunct Professor of Animal Pathology, 1976.* D.V.M., 1957, Cornell University; Ph.D., 1972, University of Wisconsin.
Weisberg, Robert, *Adjunct Professor of Oceanography, 1976.* Ph.D., 1975, University of Rhode Island.
Weisinger, Ronald S., *Director of Student Relations and Adjunct Assistant Professor of Human Development, Counseling and Family Studies, 1981, 1976.* M.A., 1976, Michigan State University.
Welsh, Oliver L., *Adjunct Professor of Speech Communication, 1980.* Ed.D., 1964, Boston University.
Williams, David O., *Adjunct Assistant Professor of Biomedical Engineering, 1977.* M.D., 1969, Hahnemann Medical College.
Wood, David, *Adjunct Assistant Professor of Mathematics, 1976.* Ph.D., 1972, University of Rhode Island.
Wyka, Cheryl R.N., *Adjunct Clinical Assistant Professor of Nursing, 1981.* M.S., 1975, University of Rhode Island.
Yacovone, Joseph A., *Adjunct Professor of Dental Hygiene, 1978, 1961.* D.M.D., 1942, Tufts University School of Dental Medicine; M.P.H., 1965, Harvard School of Public Health.
Yaker, Henri M., *Adjunct Assistant Professor of Psychology, 1981.* Ph.D., 1956, Columbia University.
Zirkind, Ralph, *Adjunct Professor of Electrical Engineering, 1973.* M.S., 1946, Illinois Institute of Technology.

## Clinical Appointments

Auger, Robert R., *Clinical Instructor in Pharmacy, 1973.* B.S., 1959, University of Connecticut.
Bauder, Stuart R., *Clinical Instructor in Dental Hygiene, 1979.* D.D.S., 1971, Georgetown University School of Dentistry; M.S., 1975, Wayne State University.
Bliss, Frank F., *Clinical Instructor in Dental Hygiene, 1960.* D.M.D., 1938, Harvard School of Dental Medicine.
Bush, John R., *Clinical Instructor in Dental Hygiene, 1976.* D.D.S., 1971, University of Nebraska College of Dentistry.
Calabresi, Paul, *Clinical Professor of Pharmacology, 1977.* M.D., 1955, Yale University School of Medicine.
Cannon, Joseph E., *Clinical Professor of Public Health, 1963.* M.D., 1936, Tufts Medical School; M.P.H., 1954, Harvard School of Public Health.
Carlin, Herbert S., *Clinical Professor of Pharmacy, 1974.* M.S., 1959, Philadelphia College of Pharmacy and Science.
Cotnoir, Georgette M., *Clinical Instructor in Pharmacy, 1977.* M.B.A., 1978, Bryant College.
DiBenedetto, Joseph, *Clinical Associate Professor of Pharmacy, 1980.* M.D., 1972, Tufts University School of Medicine.
Fain, James A., *Clinical Instructor in Nursing, 1979.* Diploma, 1974, St. Joseph's Hospital School of Nursing; M.S., 1979, University of Alabama.
Feldman, Jan, *Clinical Instructor in Dental Hygiene, 1973.* D.D.S., 1964, University of Pennsylvania School of Dentistry; Certificate in Endodontics, 1970, Boston University School of Graduate Dentistry.
Finck, Sara V., *Clinical Coordinator, Speech and Hearing Clinic, 1975.* M.A., 1972, University of Rhode Island.
Fisher, Kathleen N., *Clinical Instructor in Pharmacy, 1977.* B.S., 1971, University of Rhode Island.
Frazier, P. Gregory, *Clinical Instructor in Dental Hygiene, 1980.* D.D.S., 1975, University of Maryland Dental School.
Gibson, Thomas C., *Clinical Instructor in Pharmacy, 1973.* B.S., 1966, University of Rhode Island.
Guthrie, James R., *Clinical Professor of Health Sciences, 1977.* M.D., 1948, New York University College of Medicine.
Haspela, Neil A., *Clinical Instructor in Pharmacy, 1974.* M.S., 1974, Northeastern University.
Holm, Alison L., *Clinical Instructor in Pharmacy, 1977.* B.S., 1977, University of Rhode Island.
Kaufman, Robert L., *Clinical Instructor in Pharmacy, 1970.* M.S., 1969, University of Rhode Island.
Kershaw, A. James, *Clinical Instructor in Dental Hygiene, 1962.* D.D.S., 1932, University of Maryland Dental School.

Kilcline, Bernard A., *Clinical Instructor in Dental Hygiene, 1980.* D.M.D., 1972, Fairleigh Dickinson School of Dentistry.
King, Thomas F., *Clinical Instructor in Pharmacy, 1977.* B.S., 1953, Massachusetts College of Pharmacy.
Lancaster, William J., *Clinical Instructor in Pharmacy, 1973.* B.S., 1960, Massachusetts College of Pharmacy.
Leone, Marion T., *Clinical Instructor in Respiratory Therapy, 1978.* R.N., 1959, Cambridge City Hospital.
Lombardi, Ronald M., *Clinical Instructor in Pharmacy, 1978.* B.S., 1970, University of Rhode Island.
Measley, Beth N., *Clinical Instructor in Pharmacy, 1977.* B.S., 1974, University of Rhode Island.
Miller, Gary E., *Clinical Instructor in Dental Hygiene, 1979.* D.D.S., 1970, University of Missouri at Kansas City, School of Dentistry.
Mullane, James R., *Clinical Instructor in Dental Hygiene, 1979.* D.D.S., 1964, State University of New York, Buffalo, School of Dentistry.
Murphy, James N., *Clinical Instructor in Pharmacy, 1974.* M.S., 1970, University of Rhode Island.
Nelson, Euguene M., *Clinical Instructor in Dental Hygiene, 1962.* D.D.S., 1946, University of Maryland Dental School; Certificate in Orthodontics, 1950, Tufts University School of Dental Medicine.
Persechino, Dante, *Clinical Instructor in Dental Hygiene, 1961.* D.D.S., 1958, Temple University School of Dentistry.
Regan, J. Barry, *Clinical Assistant Professor of Speech Communication, 1972.* D.Ed., 1967, Boston University.
Ross, Stuart, *Clinical Instructor in Dental Hygiene, 1975.* D.M.D., 1970, Tufts University School of Dental Medicine; Certificate in Periodontics, 1974, Boston University School of Graduate Dentistry.
Schwab, Jay S., *Clinical Instructor in Dental Hygiene, 1970.* M.Sc.D., 1969, Boston University School of Graduate Dentistry; Certificate in Pedodonotics, 1969, Boston University School of Graduate Dentistry.
Tompkins, John F., *Clinical Instructor in Dental Hygiene, 1968.* D.D.S., 1965, Georgetown University School of Dentistry.
Wellins, Ira, *Clinical Instructor in Pharmacy, 1973.* B.S., 1941, Connecticut College of Pharmacy; B.A., 1947, University of Connecticut.
Yashar, John J., *Clinical Lecturer in Pharmacology, 1963.* M.D., 1950, American University and Teheran University.

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Capt. Charles A. Brown, *Naval Regional Dental Center, Newport*

### Medical Technology

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Thomas S. Micolonghi, M.D., *Director*
Claire M. Geddes, M.A., *Program Director*
Glenn C. Flodstrom, M.S., *Education Coordinator*
Joseph Katz, Ph.D.
Fredy P. Roland, Ph.D.

*Miriam Hospital*
Sumner I. Zacks, M.D., *Director*
Michelle Wright, M.S., *Education Coordinator*
Jacob Dyckman, M.D.
Antone Medeiros, M.D.
David Morris, Ph.D.

*Rhode Island Hospital*
George F. Meissner, M.D., *Director*
Dorothy Bergeron, M.S., *Program Director*

*Rhode Island Medical Center*
Ho Young Lee, M.D., *Director*
Ann Marie Roberti, M.S., *Education Coordinator*

*The St. Joseph Hospital*
Salvatore R. Allegra, M.D., *Director*
Gladys L. Cok, Ph.D., *Program Director*

### Nursing

*Allen's Health Center, Inc.*
Betty Jane Ruffner, R.N., *Director of Nursing*

*Bristol County Head Start and Day Care Center*
Lorraine Emmett, *Director*

*Childbirth Education Association of Southern Rhode Island*
Pat Ciccione, R.N., *Childbirth Educator*
Jackie Harmon, R.N., *Childbirth Educator*

*East Shore District Nursing Association*
Margaret Bailey, B.S., R.N., *Assistant Supervisor*
Mary Ann Gentile, B.S., R.N., *Head Supervisor*

*Fruit Hill Day Care Center*
Sister Ruth Crawley, F.M.M., *Director*

*Kent County Visiting Nurse Association*
Grace Herrington, M.S.W., *Acting Director*

*The Miriam Hospital*
Matt Blade, *Respiratory Therapist*
Marsha Lyle, R.N., *Staff Development, Recovery Unit*
Jeanette Matrone, R.N., M.S., *Director of Nursing Service*
Linda Palmatier, R.N., M.S., *Psychiatric Nurse Clinician*
Susan Stuart, R.N., *Enterostomy Therapist*

*MHRH – Institute of Mental Health*
Joseph Bevilacqua, Ph.D., *Director*
Anita Fine, R.N. M.S., *Director of Nursing*
Peter Miller, R.N., M.S., *Clinical Specialist*
William Curran, Ph.D., *Psychologist*

*Planned Parenthood of Rhode Island*
Cynthia Weisbord, M.S.

*Providence Head Start Program*
Mary McSoley, R.N., *Health Coordinator*

*Rhode Island Hospital*
Ann Bibeau, R.N., *Ostomy Nurse*
Helen Enright, R.N., B.S., *Assistant Director, Emergency Services*
Laura Hilderly, R.N., B.S., *Clinical Specialist, Radiation-Oncology*
Sandra Zion, R.N., M.S., *Nurse-in-Chief*

*Roger Williams General Hospital*
Ann Crowley, R.P.T., *Physical Therapist*
Frank Riley, R.R.T., *Respiratory Therapist*

*Scallop Shell Nursing Home*
Nancy Murray, R.N., *Director of Nursing*

*South County Hospital*
Mary Delahanty, R.N., *Head Nurse*
Marilyn Hamilton, R.N.
Edna Otto, R.N., M.S., *Director of Nursing*

*South County Nursing Center*
Sandra Stewart, R.N., *Director of Nursing*

*Veterans Administration Hospital*
P. F. Conze, M.D.
Robert Nudal, M.D.
Walter Wilkins, R.P.T., *Physical Therapist*
Cheryl Wyka, R.N., M.S., *Nurse Practitioner*

*Visiting Nurse Association of Providence, Cranston, Johnston and North Providence*
Jane Mackenzie, R.N., M.S., *Director*
Janet Bobit, R.N., M.S., *Assistant Director*

*Washington County Health Center*
Mary B. Hall, R.N.

*Westerly Hospital*
Joanne Sorrento, R.N., *Director of Nursing*
Nora Spens, M.D., *Pathologist*
Annette Teirney, R.N., *Chairperson, Nursing Audit Committee*
Anna Toscano, *Home Care Coordinator*
Marjory Weeden, R.N., B.S., *Nursing Supervisor*

*Westerly Nursing Home*
Bernadette Martin, R.N., *Nursing Administrator*

*Women and Infants Hospital of Rhode Island*
Mary Struck, R.N., M.S., *Vice President for Patient Care Services*
Reneé Niere, R.N., *Childhood Educator*

*Wood River Health Center*
Brenda Pukas, B.S., R.N.

*Zambarano Hospital*
Stacia Sczepan, R.N.

*Physicians Cooperating with Parent-Child Health Practicum*
Roger Ashley, M.D.
Andrew Blazer, M.D.
Kenneth Y. Beezer, M.D.
Lorand Brown, M.D.
David Chronley, M.D.
Robert Curhan, M.D.
Louis LaPere, M.D.
Daniel Massouda, M.D.
William McDermott, M.D.
Jesse A. Mendoza, M.D.
John B. Montgomery, M.D.
Samir G. Moubayed, M.D.
Douglas Nisbet, M.D.
Joseph O'Neill, M.D.
Robert O'Neill, M.D.
Clinton Potter, M.D.
Douglas A. Rayner, M.D.
Martin Schwartz, M.D.
Benjamin Vogel, M.D.
John P. Wood, M.D.

## Administrative Staff

### President's Office

Frank Newman, M.S., *President*
Nicholas Trott Long, J.D., *General Counsel*
Harold F. Smith, Sr., Ed.M., *Acting Affirmative Action Officer*
Victoria S. White, M.A., *Administrative Assistant*

### ADMINISTRATIVE DIVISIONS OF THE UNIVERSITY

### Academic Affairs

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Barbara M. Janson, *Executive Assistant*

### Business and Finance

Americo W. Petrocelli, Ph.D., *Vice President*
Deofredo M. Dolor, B.B.A., *Internal Auditor*

### Development and Alumni Affairs

James W. Leslie, M.S., *Vice President*
Marianne Poules, *Administrative Assistant*

### Student Affairs

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Nancy K. Griffin, B.S., *Administrative Assistant*

### ADMINISTRATIVE OFFICES

### Academic Computer Center

Nelson H. Weiderman, Ph.D., *Director*
James M. Shaw, M.S., *Associate Director*
David M. Clayton, B.S., *Assistant Director*
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Frank P. Caraccia, B.S., *Manager of Operations*
James M. Shaughnessy, M.S., *Manager, User Services*
David E., Tetreault, M.S., *Systems Programming Manager*
David A. Azzinaro, *Systems Programmer*
Judith Bates, B.S., *Programmer, Consultant*
James E. Bradley, B.A., *Systems Programmer*
Craig D. Dickstein, M.S., *Programmer, Consultant*
Peter A. Ferrara, Jr., M.S., *Systems Programmer*
Roger K. Greenall, Jr., *Programmer, Consultant*
Suzanne Smith, M.A., *Programmer, Consultant*
Irene B. Svagan, M.A., *Technical Writer*

### Administrative Computer Center

John Barry, A.S., *Acting Director*
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Gordon E. Napier, M.M.A., *Assistant Director for Internal Studies*
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*Barbara M. Leonard, *Executive Vice President, H & H Screw Products Manufacturing Company*
Robert Liguori, *Attorney at Law*
Clifton A. Moore, *President, Business Development Company of Rhode Island*
Robert L. Mushkin, *Vice President, Industrial National Corporation*
Douglas L. Nolan, *Vice Chairman of the Board, Filmways, Inc.*
William A. Orme, *Secretary, The General Electric Foundation*
*Julius L. Pericola, *President, Bristol Laboratories, Division of Bristol-Myers Company*
*Ralph C. Potter, *Chairman of the Board, Potter Hazlehurst, Inc. (retired)*
John Ricottilli, Jr., *Senior Vice President, Taco, Inc.*
Don H. Rohrer, *Director of Administration, State of Rhode Island*
*Vincent A. Sarni, *Group Vice President – Chemicals PPG Industries, Inc.*
Gary C. Schuler, *Senior Vice President of Operations, Bostitch*
Robert Sullivan, *Senior Partner, Arthur Young and Co.*
John Tierney, *Deputy Director, Rhode Island Department of Health*
Richard B. Walls, *Vice President – Marketing, A.T. Cross Company*
Edwin P. Young, *Vice President and Assistant Publisher, The Providence Journal Company (retired)*

*Members of Business Associates Program. Other member: Arthur Anderson & Company.

### College of Engineering Advisory Council

Renato A. D'Antonio, *President and Chairman, International Data Sciences, Inc.*
Fred C. Bailey, *President, Teledyne Engineering Services*
Cesare Caprio, *Staff Engineer, IBM Corp.*
Duncan H. Doolittle, *President, RI Energy Corp.*
Waldemar J. Elsdoerfer, *President, International Machine & Tool Corp.*
Gordon H. Mabey, *President, Eastern Machine Corp. & Accurate Grinding, Inc.*
Glen H. Mackal, *President, Halkey-Roberts Corp.*
James T. O'Rourke, *President, Industrial Division Camp Dresser & McKee, Inc.*
Arthur Reichstetter, *Vice President in Corporate Finance, The First Boston Corp.*
Raymond Salzillo, *Vice President, Old Stone Bank*
Quentin C. Turtle, *R & D Manager, Federal Products*
Nelson C. White, *Consultant*

### College of Pharmacy Advisory Committee

Vincent Alianiello, *Rhode Island Board of Pharmacy*
Carl A. Berg, *Rhode Island Board of Pharmacy*
Michael Boyle, *Manager, McKesson and Robbins, Inc.*
Leo Brennan, *Pharmacist, Ivy Drug*
Peter Bulger, *Assistant Director of Pharmacy, Kent County Hospital*
John Campoli, *Chief of Pharmacy Section, Division of Drug Control, Rhode Island Department of Health*
William Cornell, *Owner, Cornell's Pharmacy*
Amario DiOrio, *Owner, Oaklawn Pharmacy*
George Ferri, *Owner, Village Pharmacy, Inc.*
William Garland, *Owner, Bradbury's Pharmacy*
Joseph Gendron, *Executive Secretary, Rhode Island Pharmacy Association, and Senator, Rhode Island General Assembly*
Charles Hachadorian, *Administrator, Department of Drug Control, State of Rhode Island*
John S. Haronian, *President, Douglas Drug*
George E. Kilguss, Jr., *Senior Vice President, Citizens Bank*
William Lang, *Administrator, Kent County Memorial Hospital*
Charles Lynch, *Owner, Lynch Pharmacy*
John Maciel, *Pharmacist*
Charles Mahoney, *Director of Education & Training, Department of Pharmacy, Rhode Island Hospital*
Earl Mason, *Pharmacist*
Joseph Navach, *Pharmacist*
James R. Senerchia, *President, Providence Wholesale Drug Co.*
Anthony Solomon, *Owner, Anthony's Pharmacy and Treasurer of the State of Rhode Island*
Ira Wellins, *Owner, Bayshore Pharmacy*
Richard Yacino, *Owner, E.P. Anthony Inc.*

### College of Resource Development Advisory Committee

John Hood, *Escoheag, Chairman*
Russell J. Hahn, *Cranston*
Alfred Hawkes, *Providence*
Robert J. Kelley, *Saunderstown*
Harold W. Markham, *Wyoming*
Blanche Murray, *Jamestown*
Lindell Northup, *Providence*
Harry Prebluda, *Miami, Fla.*
John Rego, *Peacedale*
Joseph Rock, *Wakefield*
William M. Stamp, *Cranston*
C. Champlin Starr, *Chepachet*
Raymond Stockard, *Wakefield*
Jonothan Tobey, *Townshend, Vt.*
H. Winfield Tucker, *Slocum*
Robert VanHof, *Portsmouth*
David Wilkes, *Warwick*

### Graduate Library School Advisory Committee

Nadine Houston, *RIEM*
Richard Howard, *Director, Audiovisual Center*
James Kenny, *Rhode Island College Library*
John Linford, *Director, NELINET*
Lee McDuffie, *Executive Secretary, NELA*
William Metz, *Department of History*
Richard Olsen, *CRIARL, Rhode Island College*
Ann Randall, RILA, *Brown University Library*
Thomas Surprenant, *N.E. Educational Media Association*
Barbara Wilson, *Chief of Library Services, R.I. Department of Library Services*

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# Appendix

## Research and Extension Units

**Agricultural Experiment Station.** (Est. 1888. In Col. of Resource Devel.) Basic and applied investigation by the departments of the college into natural and human resources. Conservation and management of resources; improvement of the quality of environment, enhancement of home life, and support of resource-using business and industry. Strong orientation to estuarine and marine problems. Publication of research results in station bulletins available to the public.

**Bureau of Government Research.** (Est. 1960) Research, consultation, and training in public administration, especially in state and local government. Consulting services in general organization and management, budgeting and finance management, position classifications, pay plans, and purchasing. Seminars and in-service training programs for government officials. Publication of informational pamphlets, reports, and newsletter.

**Center for Energy Studies.** (Est. 1977) Coordinates energy-related programs and research at the University. Support and promotion of energy activities of state agencies, commercial establishments, and individual citizens of Rhode Island. Technical advice and educational programs on energy conservation.

**Center for Ocean Management Studies (COMS).** (Est. 1976) Promotes effective coastal and ocean management by providing for interdisciplinary research, communication, and education on ocean management issues. Identifies these issues, holds workshops and conferences to discuss them, and develops recommedations and research programs to resolve them. Provides an opportunity for individuals from government, industry, and academic institutions to work together.

**Consortium for the Development of Technology (CODOT).** (Est. 1970. In Coll. of Resource Development) Is affiliated with the International Center for Marine Resource Development. Member universities include Michigan State, Wisconsin, California at Davis, and Washington. Assists in the improvement of food technology in low-income and developing countries; programs in Latin American countries, Africa, Far East, and Middle East.

**Coastal Resources Center.** (Est. 1971) Research projects, surveys, and studies aimed at solving marine and coastal management problems. Published reports; projects in cooperation with other University departments. Center is a primary resource for the state's Coastal Resources Management Council.

**Cooperative Extension Service.** (In Coll. of Resource Dev.) Rhode Island unit of the nation-wide informal educational organization, funded by federal, state, and local governments. Four Rhode Island offices in Newport, Greenville, East Greenwich, and Kingston. Extension programs in 1) home economics for contemporary living; 2) 4-H youth development programs; 3) aquaculture and natural resources; and 4) community development.

**Curriculum Research and Development Center.** (Est. 1969. In Coll. of Human Science and Services, Dept. of Education) Elementary and secondary curriculum evaluation and development; research in areas such as life-long learning, measurement, and human services. Specialists in research methodology and testing; curriculum development; reading, language arts, mathematics, and the base skills; and adult and vocational education.

**Division of Marine Resources.** Umbrella unit for the Marine Advisory Service, the Coastal Resources Center, the National Sea Grant Depository, and the Regional Coastal Information Center. Develops, packages, and delivers information, technology, and research results useful to the marine communities of the state, region, and nation. Specialized applied research conducted in cooperation with the Graduate School of Oceanography and with research faculty from other departments.

**International Center for Marine Resource Development (ICMRD).** (Est. 1969. Major sponsor — Agency for International Development) Helps other countries solve their marine resource problems through education, research, extension programs. Also provides educational experiences for international students and scholars. Opportunities for participation in international programs. Participates in AID-sponsored projects, such as improving fisheries in less-developed countries, and assists the University of Azores in developing rural extension services.

**Laboratories for Scientific Criminal Investigation.** (In the Coll. of Pharmacy, Dept. of Pharmacology and Toxicology) Instruction, research, and service in scientific criminal

investigation. Technical consultation for law enforcement agencies; special instruction in criminalistics for police. Close collaboration with the Rhode Island Attorney General's Office.

**Marine Advisory Service.** Field specialists and information available to the marine community of the region, under the URI Sea Grant Program. Works with local governments, fishermen, seafood processors, schools, businesses, and others interested in the management, use, development, or understanding of marine resources.

**National Sea Grant Depository.** (Est. 1971) Housed in the Claiborne Pell Marine Science Library; national site for all materials published under sea grant auspices. Subject matter touches areas such as aquaculture, mineral resources, law and socio-economics, resources recovery, ecosystems research, environmental models, living resources, biomedicinals, ocean engineering, coastal management, pollution studies, marine education, and applied oceanography.

**Regional Coastal Information Center.** (Est. 1977. Sponsored by National Oceanic and Atmospheric Administration) Provides coastal and marine information and data to planners, managers, legislators, and researchers. One of the three centers linked by a computer conferencing system. Services include literature searches, state-of-the-art compilations, regionally focused data files, lists of newly published materials and resources, newsletters and brochures.

**Research Center in Business and Economics.** (Est. 1965. In Coll. of Business Administration) Initiates, conducts, and services research activities of the faculty in the College of Business Administration. Publishes *The New England Journal of Business & Economics.*

**Rhode Island Water Resources Center.** (Est. 1965) State center for research and training in all phases of water resources. Each state has such a center established by federal law to make sure the nation at all times has a sufficient supply of water to meet its needs. Principal investigators need not be employed at the University of Rhode Island, and indeed programs with other agencies and individuals are encouraged.

**URI Clearinghouse for Volunteers.** (In Coll. of Human Science and Services) Encourages and facilitates URI volunteer activity; maintains current listings of volunteer opportunities; recruits URI students, faculty, and staff to fill these positions; matches prospective volunteers with appropriate placements.

## Loan Funds and Scholarships

These are privately contributed loan and scholarship funds. For federal programs and general student aid information see page 24.

### LOAN FUNDS

Short-term loans up to $100 are available to full-time students who can demonstrate a means of repayment. These are interest-free loans which may be used only for education-related expenses and must be repaid within 90 days.

Short-term loan funds have been contributed by private donors. In addition to an unrestricted fund, loans are available for students majoring in engineering, home economics, nursing, pharmacy, and resource development, and for graduate and international students.

Included among the many donors to the Short Term Loan Fund are: Leroy F. Burroughs, Dean Mason Campbell Memorial, Norman M. Fain, Peter M. Galanti and Josephine Galanti, Gladys E. Jack Memorial, Patrons Association, Providence Engineering Society, Providence Wholesale Drug Company, University of Rhode Island Alumni Association, John H. Washburn Memorial, and Louisa White Fund.

Fourteen-day emergency loans up to $25 are also available through the Dr. John F. Quinn Memorial Student Loan Fund.

Applications for short term loans and emergency loans are available at the Student Financial Aid Office.

### SCHOLARSHIPS

Scholarships preceded by an asterisk (*) have recipients selected by the college concerned and/or the organization providing the funds.

#### Any College of the University

*Alumni Association:* Income from endowment. (See also Carl R. Woodward, Francis H. Horn, Thomas V. Falciglia and Presidential Scholarships.)

*Alumni Ram Club Memorial:* Offered in honor of Rhode Island alumni who sacrificed their lives in two world wars. Recipients selected on the basis of financial need, campus citizenship, scholastic ability and leadership as evidenced by participation in sports and other extracurricular activities.

*Alumni Children Merit Scholarships:* Six $500 awards given annually to two sophomores, two juniors and two seniors who are sons or daughters of URI alumni. Awards based on highest grade point average for the previous academic year among the pool of applicants in each category. Awards will be given only to those who submit formal application.

*URI/Alumni Association Merit Scholarships:* Fifteen $500 awards to incoming URI freshmen based on scholastic achievement, (SAT) scores and overall record of humanities, psychology and sciences, the performing and studio arts, pure and applied sciences, and professional and human services. Open to all Rhode Island high school seniors.

*URI Class of 1930 Memorial Scholarship:* Income from 50th Class Reunion gift. Awarded to two or more undergraduate or graduate students based on academic ability and upon need, as determined by the Student Financial Aid Office.

*American Screw Company Foundation:* Income from endowment, awarded to students having financial need, with preference to children of former employees of American Screw Company.

*Amtrol Inc. Endowed Scholarships:* Awarded to children of Amtrol employees. Students without financial need will receive $100; for other children of Amtrol employees, financial need and the amount of award will be determined by URI Financial Aid office.

*Anthony Athletic Association Scholarship:* $200 awarded annually to a graduate of Coventry High School who has financial need.

*John F. Bannon Endowed Scholarship:* Earned income from endowment, to be awarded to undergraduate or graduate students on the basis of financial need.

*Ralph S. Belmont M.D. '31 Endowed Scholarship:* Income from endowment, available to undergraduate students with financial need. First consideration given to graduates of Rogers High School, Newport, R.I.

*Artacky and Elese Berberian:* Income from endowment, awarded annually to a student having financial need.

*Leroy F. Burroughs:* Income from endowment, awarded annually to a student having financial need.

*Castellucci and Galli, Inc.:* Income from endowment, awarded annually to a student having financial need.

*Citizens Bank:* $500 awarded annually to students having financial need, who are Rhode Island residents, with preference to children of employees of Citizens Bank.

*John Clarke Trust:* Annual awards to students from Aquidneck Island who have financial need.

**Lt. Parker D. Cramer '59 Memorial:* Income from endowment provides two annual

awards (a sabre and $150) to outstanding students in Reserve Officers Training Corps (ROTC) having leadership qualities and high ethical standards.

*Cranston Print Works Company Scholarships:* Awarded to dependent children of employees. Available to qualified applicants for a maximum of 2 years at up to $1,500 annually. Applications available at Office of Director of Human Resources, Cranston Print Works, Cranston, R.I.

*A.T. Cross Company:* Income from endowment, awarded to deserving students having financial need.

*Daniel R. Dye Memorial:* Income from endowment, awarded annually to a graduate of East Providence, R.I., high school who has financial need, selected by the URI Student Financial Aid Office.

*Ferland Corporation; Endowed Scholarship:* Income available to students with financial need. First preference to be given to children of employees of the Ferland Corporation.

*William N. '17 and Anita Fritsch Scholarship:* Income from endowment to be awarded to a student with financial need.

*Carlisle Hall '15 Endowed Scholarship:* Income awarded to students with financial need with preference to Kappa Rho Chapter of Phi Gamma Delta fraternity members and ROTC cadets.

*Harris Corporation:* $1,000 available annually, with preference first to children of Harris Corporation employees, second to residents of Westerly-Pawcatuck area, third to students in College of Engineering.

*Hedison Corporation:* $1,000 awarded annually to students having financial need.

*James H. Higgins Memorial:* Income from endowment, awarded to men or women students having financial need. Gift is from the estate of Mrs. James H. (Ellen F.) Higgins.

*James H. Higgins, Jr.:* Income from endowment, awarded to students having financial need.

**High School Model Legislature:* Amount of general fee awarded to an incoming freshman who has given outstanding performance in the Model Legislature. Application must be made for this award.

*Percy Hodgson:* Income from endowment, awarded annually to students having financial need, with preference to students from foreign countries.

*Francis H. Horn:* Income from gift of URI Alumni Association and gifts from Friends of Francis H. Horn, with special consideration to applicants from foreign countries who can qualify with respect to academic standing and financial need.

*Industrial National Bank of Rhode Island:* Several awards available annually to students having financial need, with preference to children of Industrial National Bank employees who have financial need.

**International Grant:* A limited number of partial or full out-of-state tuition awards based on financial need, awarded by the Director of International Student Affairs.

*Providence Journal Company:* Annual grant to students with financial need; preference to children of Journal employees.

*A. Livingston Kelley Memorial:* Income from endowment, established by the will of A. Livingston Kelley, awarded to a student having financial need, who is a resident of Rhode Island.

*Kenyon Piece Dyeworks, Inc.:* Income from endowment, with preference to children of employees having financial need.

*Paul J. Kervick Family:* Income from endowment, awarded annually to children of employees of Providence Steel and Iron Company who have financial need.

*Harry Knowles Memorial:* Income from endowment, established by the will of Harry Knowles awarded annually to students having financial need.

*Legislative Internship:* Income from endowment, given to a member of the junior class to finance a summer at the Rhode Island Legislature, serving either a state senator or a state representative.

*Leviton Foundation:* Awards available annually to children of employees of American Insulated Wire, Atlas Wire & Cable, Cable Electric Products, Leviton Manufacturing, Rhode Island Insulated Wire, and other affiliated companies. Preference given to applicants who are undergraduates with financial need and best scholastic standing.

*Austin T. Levy Memorial:* Income from endowment, awarded annually to students having financial need, with preference to graduates of Burrillville High School.

*Little Family Foundation:* Junior Achievement Fellowships for full-time graduate business study. Recipients must have been Junior Achievement participants or advisers. Preference given to Rhode Island residents with two or more years of work experience, chosen by the Graduate Business faculty. If no R.I. residents are eligible, out of state students may be chosen.

*Moore Associated Companies:* $3,000 awarded annually to students having financial need with preference to children of George C. Moore Company employees in Westerly, Carr-Fulflex, Inc. in Bristol, and Darlington Fabrics in Westerly.

*Richard B. Morrison Memorial:* Income from endowment, awarded annually to Rhode Island residents who have financial need.

*Native American Scholarship:* Annual grant awarded to a student with financial need who is a native American Indian (tribal documentation must be provided).

**Northeast Institute of Food Technologists. Undergraduate:* $300 annual award established by the Northeast section of the Institute of Food Technologists for undergraduate students in the New England area who have a significant interest in furthering the development of food science. Selection based on interest in food science, academic excellence, personal character and extracurricular activities.

*Rau Fastener Company:* Income from endowment, awarded annually to students, with preference to children of Rau Fastener employees.

*Raytheon Company:* Grants awarded annually to students having financial need.

*Louis M. Ream Memorial:* Income from endowment, awarded annually to students having financial need.

**Reserve Officers Training Corps (ROTC):* One, two and three-year scholarships awarded annually by the Department of the Army to qualified students enrolled in the ROTC program. Includes tuition, fees, textbooks, incidentals, and $100 per month (tax free). Applications may be made at the Department of Military Science, 100 Keaney Gymnasium.

**Reserve Officers Training Corps, (ROTC four-year scholarships):* Available to selected young men motivated toward a career in the Army. Includes tuition, books, laboratory fees, and $100 per month (tax free). Forward applications to Headquarters, First U.S. Army, Attn. AHAAG-CA, Fort Meade, Md. 20755, by early December of applicant's senior year in high school.

*Rhode Island Hospital Trust National Bank:* Awards available annually to Rhode Island residents, with preference given to sons and daughters of Rhode Island Hospital Trust National Bank employees.

*Pasquale and Rosaria Rizzi:* Income from endowment, awarded annually to two or more junior and/or senior members of Beta Psi Alpha chapter of Theta Delta Chi fraternity on basis of scholarship, achievement, and financial need.

*Mary L. Robinson Memorial:* Income from fund established by the will of Anna D. Robinson in memory of her mother, awarded to students with financial need.

*Samuel and Gertrude J. Rosen:* Income from endowment fund, awarded to students having financial need.

*N. Edward Rosenhirsch Memorial:* Income from endowment, awarded to students having financial need.

*Abby M. B. Slade Memorial:* Grants to students who are graduates of Providence high schools and have financial need.

*Edwin S. Soforenko Foundation Scholarship:* Income from endowment to be awarded annually to deserving students on the basis of need with first preference to employees of Insurance Underwriters, Inc., and their families.

*Stan Stutz Memorial:* Income from athletic scholarship to students with financial need, with preference to residents of Westchester County, N.Y.

**Student-to-Student:* Income from endowment fund, awarded annually.

**Alice M. Talbot:* Income from endowment, established by a $10,000 gift from The Salvation Army in appreciation of Miss Talbot's past philanthropy to The Salvation Army, and added to by the Ted Clarke family and the URI Century Club. Awarded annually to a University student selected in accordance with guidelines of the URI Century Club for scholarship recipients and with approval of the Director of Athletics of the University.

*Frederick C. Tanner Memorial Fund:* Several awards available annually, to students having financial need, with preference given to sons and daughters of Federal Products Corporation employees.

**Frederick D. Tootell Memorial:* Income from endowment, awarded annually to a student selected by the Track Club.

*Triangle Club of Kingston:* Minimum of $200 awarded annually to a student from Rhode Island having financial need.

*University Grant:* The Board of Regents has made available a sum of money to be used for scholarships. While it is expected that in any year the great majority of these scholarships will be awarded to residents of Rhode Island, in certain exceptional cases out-of-state students may qualify.

*University of Rhode Island Foundation – Trustees Scholarships:* Income from endowment appropriated annually for scholarships and awarded by the Student Financial Aid Office.

**URI Alumni Association "Presidential":* $1,000 awarded for senior year to son or daughter of URI alumnus(a) having highest cumulative grade point average for three years at URI. In the event of a tie, award to be divided. Application to be made through the Alumni Association Office.

*URI Parents Fund:* Income from endowment, awarded annually to students having financial need.

*URI Patrons Association, John F. Quinn Memorial:* Income from $5,000 endowment established by the Association as a memorial to Dr. Quinn, former Vice President for Student Affairs, to be awarded annually to a student having financial need.

*Washington Trust Company:* Awarded annually to an undergraduate student from Rhode Island having financial need.

*Westerly Lions Club:* Income from endowment, awarded annually to graduates of Westerly High School having financial need with preference to upperclassmen.

*George F. Weston Memorial:* Income from a fund established by the Providence Technical High School Athletic Field Association, awarded annually to graduates of Rhode Island high and college preparatory schools having financial need, with preference to former students and descendants of former students and teachers of Technical High School of Providence.

*David R. Wilkes:* Income from endowment, awarded annually to a student having financial need, with preference to a resident of Rhode Island.

*Woman's Seamen's Friend Society of Connecticut:* Awards to undergraduate and graduate students from Connecticut who are in marine-oriented programs and have financial need.

*Carl R. Woodward:* Income from Alumni Association gift, available annually to students having financial need.

*Lt. Charles Yaghoobian, Jr. '65 Memorial:* Income from endowment, available to a student having financial need, with first preference to residents of Blackstone Valley, R.I., majoring in physical education, and second preference to residents of Blackstone Valley, regardless of major.

**Arts and Sciences**

*Heidi Allen Memorial Scholarship:* Income from endowment fund, establishment by parents and friends of Heidi Allen to be awarded to a student with financial need who is a political science major.

*Bessie D. Belmont Memorial:* Gift of Dr. and Mrs. Ralph S. Belmont in memory of his mother. Income awarded annually to an undergraduate majoring in natural sciences on basis of scholarship and/or diligent application and financial need.

**Thomas V. Falciglia Honorary:* $240 awarded annually to a music major concentrating in piano, organ, orchestral instrument or voice on basis of musical achievement or contribution to the music program, or to a musically talented freshman, with preference to students having financial need.

*Lillian and Benjamin Fine Memorial:* Income from endowment, awarded annually to an undergraduate in journalism who has financial need.

**Kent County Dental Auxiliary:* $200 awarded annually to sophomore resident of Kent County. Based on scholarship, clinical ability, and need.

*June Rockwell Levy Memorial:* Income from endowment, awarded annually to music students having financial need.

*Henry H. Mackal:* Income from endowment, awarded to students having financial need and majoring in engineering, mathematics, natural sciences, or physical education.

*John T. McCarthy '36 Memorial:* $250 available annually for a junior or senior majoring in zoology, with preference to a student planning to attend a veterinary school.

*Mary A. Silverman-Ravin, M.D. Scholarship Award:* $250 given annually to the highest-ranked female premedical student at the close of her junior year.

**Max Rosen Memorial:* Income from endowment, awarded annually to a student having financial need, preferably a junior, majoring in history with emphasis on American history.

**Leonard Eckerman Smith Memorial:* Income from endowment awarded to students at the University of Rhode Island having a major interest in public speaking.

**Ruth Erskine Tripp Memorial:* $200 awarded annually to an undergraduate majoring in music and selected on the basis of an audition and financial need.

*Frederick J. Wilson, Jr. Memorial:* $500 awarded annually to a Rhode Island resident majoring in journalism who has financial need.

**Business Administration**

*American Production and Inventory Control Society, Providence Chapter:* $200 awarded annually to a student in a management major who has financial need.

*George A. Ballentine Memorial:* $200 awarded annually to a student with financial need.

*Dr. Winfield S. Briggs Memorial:* Income from endowment, available to students of accounting having financial need.

**Business Associates Program:* Income from endowment contributed by Bristol Laboratories, Pittsburgh Plate Glass Industries, H&H Screw Products Company, R.I. Association of Insurance Agents, Uniroyal Corporation, Arthur Anderson & Co., Kenyon Piece Dye Works and Arthur Young and Company. Students selected at the discretion of the Dean of the College of Business Administration.

*Saul and Alfred Goldstein Fund:* Income from endowment, available to a student having financial need.

*Ralph C. Potter Endowment:* Income from endowment, available to student in College of Business Administration with financial need.

**Rhode Island Association of Insurance Agents:* $2,500 awarded annually to deserving students in risk management and insurance who are Rhode Island residents.

**Rhode Island Society of Certified Public Accountants:* An annual scholarship award of $200 to a sophomore or junior majoring in accounting who has a good scholastic record.

**Engineering**

*Construction Industries of Rhode Island:* $500 awarded annually to a student from Rhode Island majoring in civil engineering who has financial need.

*Electrical League of Rhode Island:* $500 grant awarded annually to a Rhode Island resident who is majoring in electrical engineering and who has financial need.

*Institute of Electrical and Electronics Engineers, Providence Section:* $300 annual award to a deserving undergraduate majoring in electrical engineering and in need of financial aid.

**Amos Kent Memorial Scholarship:* Income from endowment created by the National Council of Engineering Associates. Awarded to a student in engineering who is entering the senior year and has ability, motivation, and financial need.

*Charles A. Maguire Associates:* Income from endowment, awarded to students in the field of engineering, having financial need.

*Arthur J. Minor Memorial:* Income from endowment, available annually to a student having financial need.

*Municipal Public Works Association of Rhode Island:* $200 awarded annually to a student from Rhode Island having financial need and majoring in civil and environmental or mechanical engineering.

*Grant H. Potter Memorial:* Income from endowment, a bequest of Warren L. Offer, for scholarships to students having financial need, with preference to Rhode Island engineering students specializing in the fields of electronics or aeronautics.

*Providence Engineering Society:* An annual award to a student in engineering selected on the basis of financial need and scholastic accomplishment.

**Human Science and Services**

**Elizabeth W. Christopher Memorial:* Income from endowment, awarded to students in home economics who have completed their fourth semester at the University. Selection will be made on the basis of scholarship and evidence of potential service and concern for the welfare of others.

*Frances DeFrance Memorial:* $200 annual award to a Rhode Island resident in the sophomore, junior, or senior class, who has financial need and who has achieved a cumulative average of 3.0 or higher during the freshman year. Contributed by Chapter B of P.E.O. Kingston, R.I. in memory of one of its founders.

**Mabel Streeter Perrin Memorial:* Income from endowment, awarded annually to students in home economics on the basis of scholastic performance and financial need. Restricted to Rhode Island residents.

**Nursing**

*M. Adelaide Briggs Memorial:* Income from endowment, available to nursing students having financial need.

*Oscar and Laurette Lapierre:* $300 grant each year for four years to a student in the College of Nursing, from Central Falls, R.I., who has financial need.

*Roddy Charitable Trust Endowed Scholarship:* Income from $25,000 available to students in the College of Nursing who have financial need.

*Frederick and Doris Titchener Nursing Scholarship:* Annual award to a student in the College of Nursing having financial need.

**Esther A. Watson Memorial:* Income from endowment, awarded annually to students having financial need, with preference to graduates of The Pawtucket Memorial Hospital School of Nursing and then relatives of such graduates.

**Oceanography**

**Andrew D. Starr Memorial:* $200 awarded annually to a graduate student having financial need.

**Pharmacy**

**Orlando Buonanno Memorial:* Awarded annually to a pharmacy student on the basis of financial need.

**Sidney Cohn Memorial:* Income from bequest, awarded to a student from the College of Pharmacy with financial need.

**Consumer Value Stores (CVS):* Three $500 awards to students who are in their fourth or fifth year, having satisfactory academic standing, financial need, and interest in a career in retail (community) pharmacy, with high preference to children of CVS employees.

**John W. Dargavel Foundation:* $200 awarded annually to a student in either his third, fourth or fifth year of pharmaceutical education and in good scholastic standing.

**Eva Librandi DeSandro Scholarship:* $200 to be awarded each year to a freshman pharmacy student from Rhode Island with high scholastic ability and financial need.

**Barney M. Goldberg Fund:* Available to students in third, fourth or fifth year who have financial need.

**Florence Champlin Hamilton Memorial:* Income from endowment, awarded annually to a student in the College of Pharmacy on the basis of scholastic ability and financial need.

**La Verdiere Drug Company:* $250 awarded annually to student in third, fourth, or fifth year on the basis of satisfactory scholastic standing and financial need.

**Edward M. Lee Memorial:* Income from endowment, awarded annually to students from the Woonsocket and North Smithfield area.

**Mrs. C. Gordon MacLeod:* $250 awarded annually to student(s) in the College Pharmacy on the basis of scholastic ability and financial need.

**William G. Peckham Memorial:* Established by the will of Mary M. Peckham (Mrs. William G.), the scholarship provides $200 to a first-year student registered in pharmacy and continues until graduation if merited by scholastic performance.

**Rhode Island College of Pharmacy:* Income from endowment, for scholarship in the field of pharmacy.

**Rhode Island College of Pharmacy Class of 1926:* A sum from which scholarships are awarded on the basis of financial need and scholarship.

**Rhode Island Pharmaceutical Association:* $300 awarded annually to an upperclass student in the College of Pharmacy on the basis of scholastic ability and financial need.

**SEMPA Pharmacy Award:* Endowment income from a gift of the Southeastern Massachusetts Pharmaceutical Association to a third, fourth, or fifth-year pharmacy student from southeastern Massachusetts. Priority to scholastic excellence above financial need.

**Walter B. Thompson Memorial:* Income from endowment, awarded annually to a deserving student.

**Waterbury Druggists' Auxiliary:* $200 available annually to a worthy third, fourth, or fifth-year student from the area of Waterbury, Conn.

*Heber W. Youngken, Jr. Scholarship:* Awarded annually to a student in the fourth or fifth-year class who has demonstrated outstanding service activity in the interest of pharmacy at state and/or national levels.

**Resource Development**

*Anonymous:* Income from endowment, awarded annually to students in Fisheries and Marine Technology, having financial need, with preference to graduates of Martha's Vineyard Regional High School and then to graduates of Cape Cod High School.

*Ashaway Line and Twine Manufacturing Co. (Lloyd Robert Crandall Memorial):* Income from endowment, awarded annually to students in Fisheries and Marine Technology, having financial need.

*John W. Atwood Memorial:* Income from endowment, awarded annually to a junior or senior student in animal science programs; students to be selected by a committee on the basis of financial need, academic performance, and interest.

*John Samuel Clapper Memorial:* Income from endowment established by Orville O. Clapper in honor of his father who pioneered the development of modern turf. Awards to outstanding juniors or seniors showing marked and abiding interest in turf culture.

*Cofish International, Inc.:* Grant in the amount of $2,000 to a student in the final year of the Fisheries Marine Technology program, who demonstrates effort and excellence in the course of studies.

*Cedric C. Jennings '37 Memorial:* Income from endowment available annually to students having financial need who are studying entomology or plant pathology.

*Morton and Ruth Grossman Scholarship.* $500 awarded annually to a student studying for the profession of turfgrass management. Recipient will be selected by faculty in Plant and Soil Science who serve as advisers to students enrolled in Turfgrass and Grounds Management option.

*Dr. J. T. Kitchin Memorial:* $200 to $400 awarded annually by the Rhode Island Fruit Growers' Association to a deserving student with an interest in fruit growing.

*Alice P. Mayer:* Three annual awards of $500 each to students with interest in agriculture or horticulture, who reside in Newport County. Preference to junior or senior students.

*Jean Louise Pimental '70 Memorial:* $200 annual award to a student in animal science, with preference to a woman from Rhode Island.

*Point Judith Striped Bass and Blue Fish Tournament:* Annual award to a student in Fisheries and Marine Technology, having financial need.

*John E. Powell Memorial:* Income from endowment available annually to students on basis of worth and need.

*Michael Polevy Memorial Scholarship:* $200 awarded to a senior in the College of Resource Development who has financial need. Selection to be made by faculty in Plant and Soil Science Department.

*Ralston-Purina: $650 award to an outstanding student with professional interest in food science. Selection is based on scholarship, leadership, character, citizenship, potential, and need. Selection by Ralston-Purina from applications recommended by the college.

*Rhode Island Golf Course Superintendents' Association Scholarship:* $200 awarded annually to a student studying for the profession of turfgrass management, who has an expressed interest in golf course maintenance.

*Golf Course Superintendents' Association of America Scholarships:* $500 scholarships awarded on a competitive basis nationally on the basis of scholastic ability, professed interest in golf turf management, and recommendation of advisers.

*Southern Rhode Island Soil Conservation District Scholarship:* $500 awarded to a junior or senior with professional interest in soil conservation or related area. Selection made by a committee of soils faculty and district representatives, based on scholarship, experience in soil science, extracurricular activities, character, and attitude.

**SPECIAL AWARDS**

*L. Douglas Nolan Academic Achievement in Science Award:* Income from an endowment awarded annually to a student in graduate school who excells in one of the natural sciences.

*Rhode Island Nurserymen's Association Award:* $150 annually to student in advanced course in landscape design, who attains the highest score in competitive examination in plant identification. Reward presented at association's annual spring meeting.

*Rhode Island Nurserymen's Association Scholarship:* $150 annually to student who has completed at least five of the eight professional courses specified in ornamental horticulture and has attained highest cumulative grade point average. Recipient selected by Associate Dean for Instruction. Award presented at association's spring meeting.

*Rhode Island Tuberculosis and Respiratory Disease Association Award:* $500 awarded annually in honor of its former president, Harry L. Gardner, to a senior accepted by accredited medical school. Based on need. Apply to chairman of Faculty Premedical Advisory Committee.

*Richard Dawson Wood Memorial Award for Excellence in Botany:* Income from endowment fund, awarded on the basis of scholarship, character, academic integrity and intellectual enthusiasm, to a senior entering graduate studies in botany. In addition, an independent research paper on a project previously discussed with a faculty member in botany must be submitted by April 30 of the senior year.

*Dr. Barbara Allen Woods Memorial Awards for Excellence in German Studies:* Students selected by faculty members in German Department.

## Historical Outline

1888 State Agricultural School established
Agricultural Experiment Station established
Watson farm purchased as site
1889 Taft Laboratory
John H. Washburn appointed principal
1890 South Hall
1891 College Hall
Ladd Laboratory
1892 Rhode Island College of Agriculture and Mechanic Arts founded May 19
John H. Washburn, President
1894 First class graduated
Alumni Association formed
1895 College Hall burned and rebuilt as Davis Hall
1897 Lippitt Hall
First *Grist*, yearbook, published
1898 Preparatory school established
1902 Homer J. Wheeler, Acting President
1903 Kenyon L. Butterfield, President
1904 Extension Department organized
1906 Howard Edwards, President
Greenhouse and Horticultural Building
1907 Master's degree awarded for the first time
1908 Preparatory school discontinued
The *Beacon* (student newspaper) established as a monthly
Rho Iota Kappa (first fraternity)
1909 East Hall
By charter amendment, name changed to Rhode Island State College
1910 Theta Chi (first national fraternity)
1912 First fraternity house (Beta Phi, now Phi Gamma Delta)
1913 Ranger Hall
Chapter of Phi Kappa Phi, national honor society
1918 Academic work suspended April 28
Student Army Training Corps
1919 Academic work resumed January 2
1921 Washburn Hall
1924 Home Management House
1928 Memorial Gateway
Bliss Hall
Edwards Hall
Rodman Hall
East Farm acquired
1930 John Barlow, Acting President
1931 Raymond G. Bressler, President
President's House
1932 Reorganization of college: Schools of Engineering, of Science and Business, and Agriculture and Home Economics
1934 Asa Sweet and Edward Sweet lands purchased
1935 Chapter of Phi Sigma, national biological science honor society
1936 Chapter of Alpha Zeta, national agricultural honor society
Narragansett Marine Laboratory
Animal Husbandry Building
Eleanor Roosevelt Hall
Quinn Hall
Central Heating Plan
Peckham farm purchased
1937 Green Hall
1938 Meade Field
1939 Board of Trustees of State Colleges created
1940 John Barlow, Acting President
1941 Carl R. Woodward, President
1942 Accelerated war program with summer term initiated
Reorganization of School of Science and Business into separate schools of science and Business Administration
Engineering Experiment Station established
Industrial Extension Division established
1943 Army Specialized Training Unit assigned to college
1944 Second Peckham farm purchased
Industrial Extension Division replaced by Division of General College Extension
War-accelerated program ended in September
1945 Degree program in nursing established
Sherman farm acquired
1946 Quonset hut colony erected as emergency housing project
School of Home Economics established
1947 Chapter of Phi Alpha Theta, national history honor society
1948 School of Arts and Sciences established
Bachelor of Arts degree authorized by Board of Trustees
1949 B.A. degree awarded for first time at June Commencement
1950 Butterfield and Bressler Halls
1951 Name changed to University of Rhode Island by act of General Assembly
Chapter of Omicron Nu, national home economics honor society
1952 Pastore Chemical Laboratory
1953 Chapter of Sigma Xi, national scientific honor society
Frank W. Keaney Gymnasium
Laboratories for Scientific Criminal Investigation established
1954 Chapter of Tau Beta Pi, national engineering honor society
Rhode Island Memorial Union
1955 Chapter of Pi Sigma Alpha, national political science honor society
1957 College of Pharmacy established
1958 URI Foundation established
Francis H. Horn, President
Degree of Doctor of Philosophy authorized by Board of Trustees
Child Development Center
Hutchinson, Peck and Adams Residence Halls
Hope Dining Hall
1959 Woodward Hall
Administration Building
Computer Laboratory established
Chapter of Rho Chi, national pharmaceutical honor society
Potter Infirmary
Wales and Kelley Halls
1960 Fish Oceanographic Laboratory
Independence Hall
Davis Hall and East Hall remodeled
Two-year program in dental hygiene established
Bureau of Government Research established
Faculty Senate established
1961 Graduate School of Oceanography
Tucker, Merrow and Browning Halls
Gilbreth Hall
1962 Crawford Hall
W. Alton Jones Campus acquired
*Trident* commissioned
Chapter of Kappa Delta Pi, national education honor society
1963 Tyler Hall
Graduate Library School established
Weldin and Barlow Halls
1964 Chapter of Omicron Delta Epsilon, national economics honor society
Fogarty Health Science Building
Watson House restored
1965 Addition to the Memorial Union
University Library
Law of the Sea Institute established
Sherman Maintenance Building
Bachelor of Fine Arts and Bachelor of Music degrees authorized
Research Center in Business and Economics established
Water Resources Research Center established
1966 Aldrich, Burnside, Coddington, Dorr, Ellery, and Hopkins Halls, and Roger Williams Center
Justin S. Morrill Science Building
Fine Arts Center (phase I)
Institute of Environmental Biology established
1967 Two-year program in commercial fisheries established
Ballentine Hall
F. Don James, Acting President
1968 Kelley Hall Research Annex
Pell Marine Science Library
Horn Laboratory
First Sea Grant received
Werner A. Baum, President
New England Marine Resources Information Program established
1969 Home Management Center
Curriculum Research and Development Center established
Chapter of Sigma Pi Sigma, national physics honor society
Chapter of Sigma Delta Pi, national Spanish honor society
Heathman Hall
Faculty Center
Dental hygiene bachelor's program established
International Center for Marine Resource Development established
1970 Fayerweather Hall
Gorham Hall
Consortium for the Development of Technology established
Marine Advisory Service established

Chapter of Beta Gamma Sigma, national business administration honor society

1971 Tootell Physical Education Center
Fine Arts Center (phase II)
Conference Center, Jones Campus
Administrative Services Center
Chapter of Beta Alpha Psi, national accounting honor society
Board of Regents for Education (Education Act of 1969) takes over direction of higher education
URI named one of first four Sea Grant Colleges and designated National Sea Grant Depository

1972 Biological Sciences Building
Chafee Social Science Building
University College established
Coastal Resources Center established
Graduate apartment complex

1973 William R. Ferrante, Acting President
Research Aquarium
Science Research and Nature Preserve Buildings, Jones Campus
Community Planning Building

1974 Frank Newman, President

1975 Addition to the University library building

1976 Research ship *Endeavor* commissioned

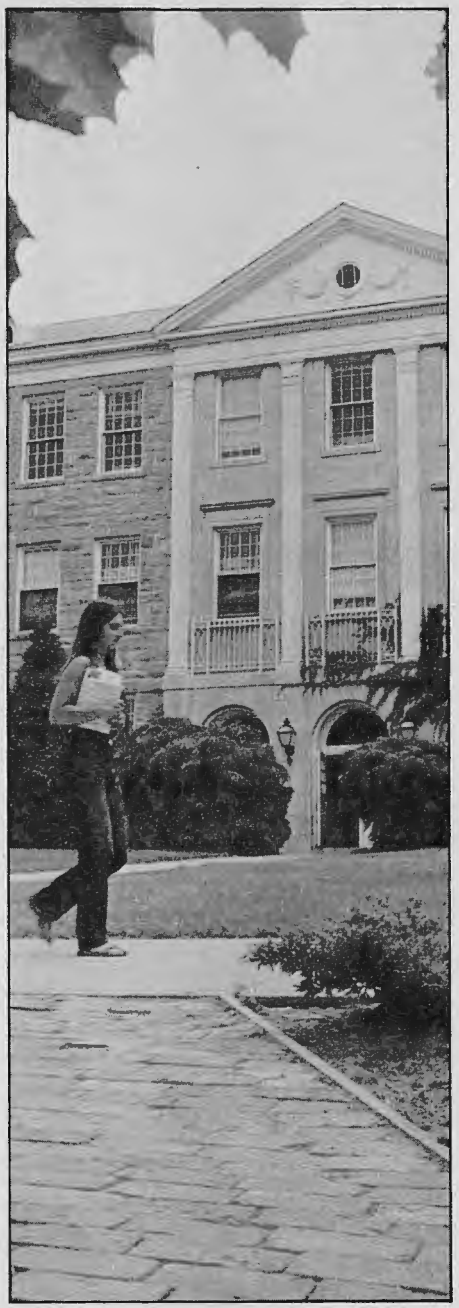
1977 Bachelor of General Studies established
White Hall
Chapter of Phi Beta Kappa, national liberal arts honor society
Center for Ocean Management Studies established
Center for Energy Study established
Regional Coastal Information Center established
Chapter of Delta Pi Epsilon, national business education honor society

1978 College of Human Science and Services succeeds College of Home Economics
Norman D. Watkins Laboratory

1979 Information Center

1980 Chapter of Sigma Theta Tau, national nursing honor society
Institute for Human Science and Services established

1981 Center for Atmospheric Chemistry
Division of University Extension name changed to College of Continuing Education
Board of Governors for Higher Education estalished by act of General Assembly



## Summary of Enrollment Fall Term 1980 (Non-Duplicated)

**Undergraduate Students by College Kingston Campus**

| | |
|---|---|
| Arts and Sciences | 1,261 |
| Business Administration | 780 |
| Engineering | 507 |
| Human Science and Services | 466 |
| Nursing | 224 |
| Pharmacy | 279 |
| Resource Development | 640 |
| University College | 4,880 |
| Unassigned | 9 |
| Non-Degree (Credit) | 221 |
| *Total* (Male — 4,738, Female — 4,529) | 9,267 |

**Graduate Students Kingston Campus**

| | |
|---|---|
| Degree | 1,449 |
| Degree (Continuous Registration) | 118 |
| Non-Degree (Continuing) | 135 |
| Post-Baccalaureate (Temporary) | 240 |
| *Total* (Male — 1,025, Female — 862) | 1,942 |

| | |
|---|---|
| **TOTAL ENROLLMENT KINGSTON CAMPUS** | 11,209 |

**College of Continuing Education**

| | |
|---|---|
| Undergraduate | 2,872 |
| Graduate | 498 |
| Non-Degree (Credit) | 826 |
| **TOTAL ENROLLMENT CONTINUING EDUCATION** | 4,196 |
| **GRAND TOTAL** | 15,405 |

## Campus Map

### Academic and Service Buildings

Adams House 16
*Administration Bldg. 42
*Administrative Services Ctr. *campus mail* 102
*Athletic Bubble 109
*Ballentine Hall *business administration* 36
*Biological Sciences Bldg. 33
*Bliss Hall *engineering* 28
Business Office 55
Catholic Ctr. 22
*Central Receiving 100
*Chafee Social Science Ctr. 37
*Christopher House *Hillel, fraternity mgrs.* 113
*Child Development Ctr. 71
Community Planning Office 6
Community Planning Laboratory 25
Commuters' Hostel *(Rte. 138 W.)*
*Crawford Hall *chemical engineering* 29
Davis Hall 41
East Farm *aquaculture and pathology (off Rte. 108)*
East Hall *physics* 19
*Edwards Hall 11
Episcopal Ctr. 50
Fine Arts Ctr. 23
Fire Station 110
*Fogarty Health Science Bldg. *pharmacy* 46
Garage 99
*Gilbreth Hall *industrial engineering* 26
*Green Hall 8
*Greenhouses 24
Human Transition Center 72
*Independence Hall 10
International House 48
*Keaney Gymnasium 108
*Kelley Hall *electrical engineering* 30
Landscape and Grounds 98
*Library 39
Lippitt Hall 35
*Memorial Union 53
*Morrill Science Bldg. *life sciences* 45
*Pastore Chemical Laboratory and Annex Annex 44
Peckham Farm *animal science (off Rte. 138 W.)*
Personnel and Payroll 56
Pharmacy Annex 51
Plains Field House *(Plains Rd.)*
Planetarium 20
*Police 52
*Potter Bldg. *health services* 87
Property and Space 101
Purchasing 54
*Quinn Hall *human science and services* 43
Ranger Hall *biological sciences* 9
Riding Stables *(off Rte. 138 W.)*
Rifle Range 106
*Rodman Hall *library school* 38
*Roosevelt Hall *student services* 57
Ruggles House *Ocean Management Studies* 4
Safety and Health 114
*Sherman Bldg. *maintenance 105*
Taft Hall 40
*Tootell Physical Education Ctr. 107
Tucker House 17
Turf Field House *(Plains Rd.)*
*Tyler Hall *academic computer* 31
Uhuru SaSa 5
*Wales Hall *mechanical engineering* 27
Warehouses 103
Washburn Hall 18
Watson House 58
*White Hall *nursing* 60
Women's Center 115
*Woodward Hall *resource development* 34

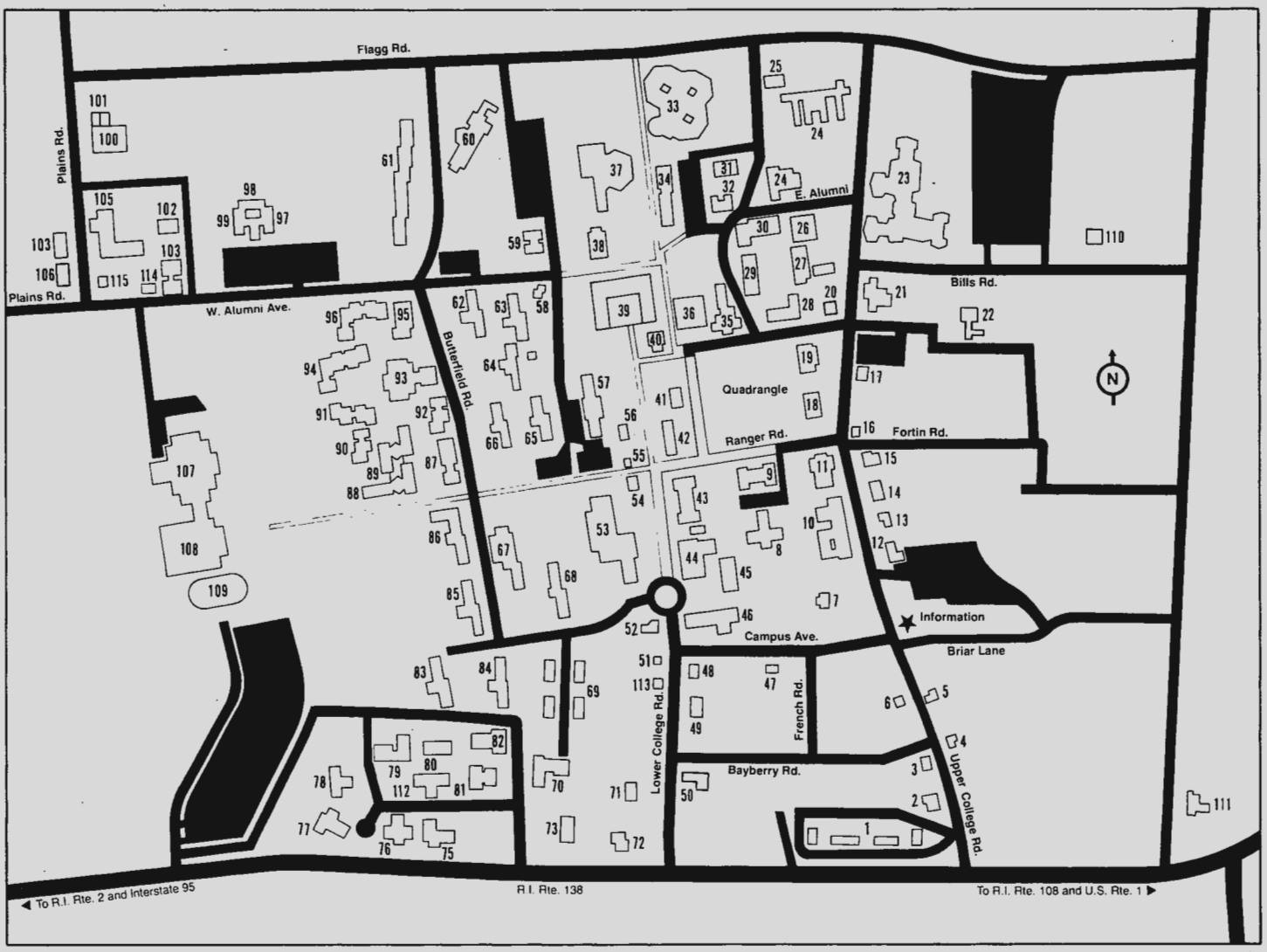
### Residence and Dining Halls

*Adams Hall 85
Aldrich Hall 95
*Barlow Hall 84
Bressler Hall 68
*Browning Hall 86
*Burnside Hall 96
*Butterfield Hall *residence and dining* 67
Coddington Hall 94
*Dorr Hall 91
Ellery Hall 90
Faculty Apartments 1
*Fayerweather Hall 89
Fernwood Apartments *(Rte. 138 W.)*
*Gorham Hall 88
Graduate Housing *(off Rte. 138 opposite fraternity village)*
*Heathman Hall 61
*Hope Hall *dining* 64
*Hopkins Hall 92
*Hutchinson Hall 65
*Merrow Hall 62
*Peck Hall 66
Peckham Apartments *(Rte. 138 W.)*
President's House 7
*Roger Williams Ctr. *housing office and dining* 93
Student Apartments 69
*Tucker Hall 63
*University Club 21
*Weldin Hall 83

### Fraternities and Sororities

Alpha Chi Omega 73
Alpha Delta Pi 70
Alpha Epsilon Pi 82
Alpha Xi Delta 78
Chi Omega 79
Chi Phi 12
Delta Delta Delta 49
Delta Zeta 75
Lambda Chi Alpha 111
Phi Gamma Delta 59
Phi Kappa Psi 81
Phi Sigma Kappa 3
Sigma Alpha Epsilon 13
Sigma Chi 14
Sigma Delta Tau 77
Sigma Kappa 76
Sigma Nu 15
Sigma Phi Epsilon 112
Tau Epsilon Phi 47
Theta Chi 2
Theta Delta Chi 32
Zeta Beta Tau 80

*Accessible to the handicapped


Flagg Rd.
Plains Rd.
Plains Rd.
W. Alumni Ave.
Butterfield Rd.
Quadrangle
Ranger Rd.
E. Alumni
Bills Rd.
Fortin Rd.
Information
Campus Ave.
Briar Lane
French Rd.
Lower College Rd.
Upper College Rd.
Bayberry Rd.
N
◀ To R.I. Rte. 2 and Interstate 95
R.I. Rte. 138
To R.I. Rte. 108 and U.S. Rte. 1 ▶

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